

UNITED STATES DISTRICT COURT  
SOUTHERN DISTRICT OF NEW YORK

THE UNITED STATES OF AMERICA,

v.

ROMAN STORM, ET AL.,

Defendants.

Case No. 23 Cr. 430 (KPF)

Final Pretrial Conference: July 8, 2025

**DEFENDANT ROMAN STORM'S**  
**OPPOSITIONS TO THE GOVERNMENT'S MOTIONS TO EXCLUDE**  
**THE TESTIMONY OF DEFENSE EXPERTS**

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**TABLE OF CONTENTS**

	<b><u>Page</u></b>
I. INTRODUCTION .....	1
II. LEGAL STANDARD.....	3
A. This Court Has Flexibility In Evaluating Expert Testimony Under <i>Kumho Tire</i> .....	4
B. The Defense’s Proffered Expert Testimony Will Assist the Jury .....	5
C. The Defense’s Anticipated Expert Testimony Will Not Violate Rule 704(b) .....	6
D. The Defense Disclosures Do Not Violate Rule 16, and in Any Event, Exclusion of the Defense Expert Is Not the Appropriate Remedy .....	9
III. ARGUMENT .....	11
A. Dr. Matthew Edman’s Proposed Testimony is Reliable and Helpful to the Trier of Fact and Should Be Allowed in Its Entirety. ....	11
1. Dr. Edman’s Proposed Testimony on General Features of the Ethereum Network and DeFi Protocols is Appropriate and Helpful to the Jury .....	11
2. Dr. Edman’s Proposed Testimony on the Chainalysis Sanctions Oracle Provides Crucial Context and Should Be Heard by the Jury .....	17
3. Dr. Edman’s Disclosure Was Robust and More than Adequate .....	19
B. Dr. Matthew Green’s Proposed Testimony is Reliable and Helpful to the Trier of Fact and Should Be Allowed in Its Entirety. ....	20
1. The Disclosure Regarding Dr. Green’s Testimony Was More Than Adequate .....	20
2. Dr. Green’s Proposed Background Testimony Is Proper .....	22
3. Dr. Green Will Not Be Offering Legal Opinions .....	24
4. Dr. Green’s Testimony Regarding the Intentions of the Cryptocurrency Industry Is Proper Under <i>Daubert</i> , <i>Kumho Tire</i> , and <i>Diaz</i> .....	25
C. Dr. Hurder’s Proposed Testimony is Reliable and Helpful to the Trier of Fact and Should Be Allowed in Its Entirety. ....	27
1. Under the Flexible <i>Kumho Tire</i> Standard, Dr. Hurder’s Proposed Testimony Is Reliable .....	28
(a) The Connection Between TORN’s Price and the Tornado Cash Smart Contract Activity .....	29
(b) Profits or Revenue Distributions for TORN Holders .....	30
(c) The Value of TORN as a Governance Token .....	31

(d)	TORN Token Holders Did Not Benefit from Any Illicit Use of Tornado Cash .....	32
2.	Dr. Hurder’s Testimony Is Relevant to the Issues in the Case .....	34
(a)	The Structure of TORN Allocation.....	35
(b)	Compensation from Tornado Cash .....	37
3.	Dr. Hurder’s Testimony About Blockchain and Token Ecosystem Design Will Assist the Trier of Fact Because It Is a Province Beyond the Common Experience of a Juror .....	38
D.	Michael Carter’s Proposed Testimony is Reliable and Helpful to the Trier of Fact and Should Be Allowed in Its Entirety. ....	42
E.	Jeremy Sheridan’s Proposed Testimony is Reliable and Helpful to the Trier of Fact and Should Be Allowed in Its Entirety. ....	47
1.	Mr. Sheridan’s proposed testimony is proper lay opinion. ....	48
2.	Mr. Sheridan’s testimony can be accepted as expert testimony under Rule 702. ....	51
3.	The government has articulated no actual basis to exclude the testimony under Rule 403 .....	53
F.	Douglas Jacobson’s Proposed Testimony is Reliable and Helpful to the Trier of Fact and Should Be Allowed in Its Entirety. ....	54
IV.	CONCLUSION.....	55

**TABLE OF AUTHORITIES****Page****CASES**

<i>Acosta v. Central Laundry, Inc.</i> , 273 F. Supp. 3d 553 (E.D. Pa. 2017) .....	48, 51
<i>Am. Empire Surplus Lines Ins. Co. v. J.R. Contracting &amp; Env't Consulting, Inc.</i> , 754 F. Supp. 3d 456 (S.D.N.Y. 2024).....	18
<i>Amorgianos v. Nat'l R.R. Passenger Corp.</i> , 303 F.3d 256 (2d Cir. 2002).....	3
<i>Bank of China v. NBM LLC</i> , 359 F.3d 171 (2d Cir. 2004).....	49
<i>Beastie Boys v. Monster Energy Co.</i> , 983 F. Supp. 2d 354 (S.D.N.Y. 2014).....	28
<i>Borawick v. Shay</i> , 68 F.3d 597 (2d Cir. 1995).....	3
<i>Daubert v. Merrell Dow Pharmaceuticals</i> , 509 U.S. 579 (1993).....	passim
<i>Diaz v. United States</i> , 602 U.S. 526 (2024).....	7, 8, 26, 36
<i>Elonis v. United States</i> , 575 U.S. 723 (2015).....	45
<i>Emig v. Electrolux Home Prods., Inc.</i> , 2008 WL 4200988 (S.D.N.Y. Sept. 11, 2008).....	32
<i>Fin. Guaranty Ins. Co. v. Putnam Advisory Co.</i> , 2020 WL 4251229 (S.D.N.Y. Feb. 19, 2020).....	41
<i>Hartzell Mfg., Inc. v. Am. Chemical Techs, Inc.</i> , 899 F. Supp. 405 (D. Minn. 1995).....	51
<i>Hewitt v. Metro-N. Commuter R.R.</i> , 244 F. Supp. 3d 379 (S.D.N.Y. 2017).....	4
<i>Highland Capital Mgt., L.P. v. Schneider</i> , 379 F. Supp. 2d 461 (S.D.N.Y. 2005).....	5, 22
<i>In re Fosamax Prods. Liab. Litig.</i> , 645 F. Supp. 2d 164 (S.D.N.Y. 2009).....	3, 5, 6

<i>In re Methyl Tertiary Butyl Ether (MTBE) Prod. Liab. Litig.</i> , 643 F. Supp. 2d 482 (S.D.N.Y. 2009).....	39
<i>In re N. Sea Brent Crude Oil Futures Litig.</i> , 2016 WL 1271063 (S.D.N.Y. Mar. 29, 2016) .....	28
<i>In re Pfizer Inc. Sec. Litig.</i> , 819 F.3d 642 (2d Cir. 2016).....	5, 22
<i>Kumho Tire Co. v. Carmichael</i> , 526 U.S. 137 (1999).....	passim
<i>Louis Vuitton Malletier S.A. v. Sunny Merch. Corp.</i> , 97 F. Supp. 3d 485 (S.D.N.Y. 2015).....	28
<i>Marx &amp; Co., Inc. v. Diners' Club Inc.</i> , 550 F.2d 505 (2d Cir. 1977).....	14
<i>Marx &amp; Co., Inc. v. Diners' Club, Inc.</i> , 550 F.2d 505 (2d Cir. 1977).....	24
<i>Media Glow Digital, LLC v. Panasonic Corp. of N. Am.</i> , 2019 WL 1055527 (S.D.N.Y. Mar. 6, 2019) .....	10
<i>Nimely v. City of New York</i> , 414 F.3d 381 (2d Cir. 2005).....	34
<i>Ohman J:or Fonder AB v. NVIDIA Corp.</i> , 81 F.4th 918 (9th Cir. 2023) .....	27
<i>Prime Int'l Trading, Ltd. v. BP P.L.C.</i> , 784 F. App'x 4 (2d Cir. 2019) .....	28
<i>Reach Music Pub., Inc. v. Warner Chappell Music, Inc.</i> , 988 F. Supp. 2d 395 (S.D.N.Y. 2013).....	40
<i>Restivo v. Hesseman</i> , 846 F.3d 547 (2d Cir. 2017).....	3
<i>Ruiz-Troche v. Pepsi Cola of Puerto Rico Bottling Co.</i> , 161 F.3d 77 (1st Cir.1998).....	3
<i>Scott v. Chipotle Mexican Grill, Inc.</i> , 315 F.R.D. 33 (S.D.N.Y. 2016) .....	5, 6
<i>SEC v. Ripple Labs, Inc.</i> , 2023 WL 5670711 (S.D.N.Y. Mar. 6, 2023) .....	3
<i>United States v. Amirov</i> , 2025 WL 636088 (S.D.N.Y. Feb. 27, 2025).....	21, 22
<i>United States v. Banki</i> , 685 F.3d 99 (2d Cir. 2012).....	30, 35

<i>United States v. Bankman-Fried</i> , 2023 WL 6162865 (S.D.N.Y. Sept. 21, 2023).....	16, 23
<i>United States v. Bankman-Fried</i> , 680 F. Supp. 3d 289 (S.D.N.Y. 2023).....	16, 23
<i>United States v. Bilzerian</i> , 926 F.2d 1285 (2d Cir. 1991).....	13, 14, 24
<i>United States v. Chastain</i> , 2023 WL 2966643 (S.D.N.Y. Apr. 17, 2023).....	14, 19, 23
<i>United States v. Daly</i> , 842 F.2d 1380 (2d Cir. 1988).....	19, 40, 42
<i>United States v. DiDomenico</i> , 985 F.2d 1159 (2d Cir. 1993).....	8
<i>United States v. Figueroa-Lopez</i> , 125 F.3d 1241 (9th Cir. 1997) .....	52
<i>United States v. Guo</i> , 2024 WL 2262706 (S.D.N.Y. May 17, 2024). ....	14, 29, 32, 40
<i>United States v. Kwok</i> , 2024 WL 1773143 (S.D.N.Y. Apr. 24, 2024).....	9, 10
<i>United States v. Mulder</i> , 273 F.3d 91 (2d Cir. 2001).....	40
<i>United States v. Nektalov</i> , 2004 WL 1469487 (S.D.N.Y. June 30, 2004) .....	14
<i>United States v. Pollok</i> , 2025 WL 1553327 (2d Cir. June 2, 2025) .....	8
<i>United States v. Rosario</i> , 2014 WL 6076364 (S.D.N.Y. Nov. 14, 2014).....	10
<i>United States v. Sampson</i> , 898 F.3d 270 (2d Cir. 2018).....	10
<i>United States v. Scop</i> , 846 F.2d 135, 142 (2d Cir.1988).....	24
<i>United States v. Whaley</i> , 860 F. Supp. 2d 584 (E.D. Tenn. 2012).....	48, 49

## **STATUTES**

18 U.S.C. § 1960.....	15, 25, 42, 44
31 U.S.C. § 5330(a) .....	43

**RULES**

Fed. R. Civ. P. 26.....	9, 10
Fed. R. Crim. P. 16 .....	passim
Fed. R. Evid. 403 .....	47, 53, 54
Fed. R. Evid. 701 .....	48, 49, 50, 53
Fed. R. Evid. 702 .....	passim
Fed. R. Evid. 704 .....	7, 8, 36

## I. INTRODUCTION

The government seeks to prematurely preclude Roman Storm from offering any of his proffered expert testimony on several grounds, none of which provide a basis to exclude the testimony.

On March 5, 2025, in accordance with this Court's order, the defense provided its initial expert notice, identifying the following affirmative witnesses it intends to call to provide expert testimony: (1) Dr. Matthew Green; (2) Dr. Stephanie Hurder; and (3) Dr. Matthew J. Edman. The defense also identified the following rebuttal expert witnesses: (4) Douglas Jacobson; (5) Michael Carter; and (6) Jeremy Sheridan. Finally, the defense also disclosed that it intends to call Jeremy Sheridan as a summary witness to respond to the government's proposed witnesses IRS-CI Special Agent Stefan George and FBI Special Agent Joel DeCapua.

Notably, the government does not object to the qualifications of any of Mr. Storm's experts under Federal Rule of Evidence 702 or *Daubert v. Merrell Dow Pharmaceuticals*, 509 U.S. 579, 597 (1993) and its progeny. All of the defense experts are appropriately qualified for their respective subject matters.

The government's principal challenge to the proffered defense expert testimony is relevance, as it claims that various proffered testimony fails the "fit" test under Rule 702. But the fit test is not a high bar, as the admissibility of expert testimony is favored in this circuit, and such testimony need only be helpful to the jury to warrant admission. Moreover, the government's "fit" claims are curiously blind to its own statements and writings about the scope of the case. Its arguments ignore its own Indictment, the arguments it made in opposition to Mr. Storm's motion to dismiss and motion for reconsideration, and its own expert reports. Indeed, the government goes so far as to challenge the relevance of defense expert testimony offered in



direct rebuttal to its own expert testimony. The government's own claims therefore make clear why the defense experts are necessary and will be helpful in assisting the jury.

The government also purports to challenge an alleged lack of methodology in certain expert conclusions, but it fails to acknowledge that experience and training are well-accepted grounds for expert testimony under *Kumho Tire Co. v. Carmichael*, 526 U.S. 137 (1999), and courts are granted flexibility to evaluate such testimony, with a bent toward admissibility and allowing the jury to settle disputes.

Finally, the government objects to aspects of certain testimony on the basis of alleged deficiencies in the experts' disclosures under Federal Rule of Criminal Procedure 16. Since the defense's initial disclosure on March 5, 2025 (over three months ago), the government did not request additional information from the defense on its proposed experts, including additional information on the bases of the proposed expert opinions, until it filed its motions on June 6, 2025, barely a month away from trial.<sup>1</sup> Any objections to the defense disclosures thus have been forfeited and in any event are not a reason to preclude any expert's testimony. But even if that were not the case, Mr. Storm respectfully requests this Court deny the government's requests because the defense can, and will, supplement the expert disclosures to the extent such supplementation is warranted.

For all these reasons, this Court should reject the government's requests regarding the defense experts.

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<sup>1</sup>Notably, to the extent the defense had issues with the government's disclosures, they raised them with the government and have not argued that any inadequacies are cause to exclude the testimony.

## II. LEGAL STANDARD

Courts in the Second Circuit apply “liberal admissibility standards” with respect to expert testimony. *Amorgianos v. Nat’l R.R. Passenger Corp.*, 303 F.3d 256, 267 (2d Cir. 2002). The Second Circuit has explained that “*Daubert* reinforce[d] the idea that there should be a presumption of admissibility of evidence,” reflecting the Supreme Court’s “faith in the power of the adversary system to test ‘shaky but admissible’ evidence, . . . and advanced a bias in favor of admitting evidence short of that solidly and indisputably proven to be reliable.” *Borawick v. Shay*, 68 F.3d 597, 610 (2d Cir. 1995) (citation omitted).

Accordingly, exclusion of expert testimony in this Circuit is “the exception rather than the rule.” Fed. R. Evid. 702, 2000 Advisory Committee Notes; *accord SEC v. Ripple Labs, Inc.*, 2023 WL 5670711, at \*3 (S.D.N.Y. Mar. 6, 2023). Expert testimony should be excluded only “if it is speculative or conjectural or based on assumptions that are so unrealistic and contradictory as to suggest bad faith or to be in essence an apples and oranges comparison.” *Restivo v. Hessemann*, 846 F.3d 547, 577 (2d Cir. 2017); *In re Fosamax Prods. Liab. Litig.*, 645 F. Supp. 2d 164, 173 (S.D.N.Y. 2009) (“in accordance with the liberal admissibility standards of the Federal Rules of Evidence, only serious flaws in reasoning or methodology will warrant exclusion”).

As such, “as long as an expert’s scientific testimony rests upon ‘good grounds, based on what is known,’ it should be tested by the adversary process—competing expert testimony and active cross examination—rather than excluded from jurors’ scrutiny for fear that they will not grasp its complexities or satisfactorily weigh its inadequacies.” *Id.* (quoting *Ruiz-Troche v. Pepsi Cola of Puerto Rico Bottling Co.*, 161 F.3d 77, 85 (1st Cir.1998) for the proposition that “only serious flaws in reasoning or methodology will warrant exclusion”) (internal quotations

omitted). Where an expert's testimony lies within "the range where experts might reasonably differ," the jury, and not the trial court, should "decide among the conflicting views of different experts." *Kumho Tire*, 526 U.S. at 153; *see also Hewitt v. Metro-N. Commuter R.R.*, 244 F. Supp. 3d 379, 385 (S.D.N.Y. 2017) ("[A]ny other contentions that the assumptions are unfounded go to the weight, not the admissibility, of the testimony.")

**A. This Court Has Flexibility In Evaluating Expert Testimony Under *Kumho Tire***

In *Daubert*, the Supreme Court listed four factors to guide district courts in assessing the reliability of scientific expert testimony: (1) whether the expert's technique or theory can be or has been tested; (2) whether it has been subjected to peer review and publication; (3) its known or potential rate of error; and (4) whether the theory or technique is generally accepted by the relevant scientific community. *Daubert*, 509 U.S. at 593-94. But not all experts are scientific experts whose proffered testimony can be evaluated using the *Daubert* factors: "the factors identified in *Daubert* may or may not be pertinent in assessing reliability, depending on the nature of the case, the expert's particular expertise, and the subject of his testimony." *Kumho Tire*, 526 U.S. at 150. The Supreme Court therefore granted "the trial judge broad latitude to determine" "whether *Daubert*'s specific factors are, or are not, reasonable measures of reliability in a particular case." *Id.* at 153.

Indeed, as the Supreme Court explained, "[e]xperts of all kinds tie observations to conclusions through the use of what Judge Learned Hand called 'general truths derived from . . . specialized experience.'" *Id.* at 148-49 (citing Hand, *Historical and Practical Considerations Regarding Expert Testimony*, 15 HARV. L. REV. 40, 54 (1901)). And whether the specific expert testimony focuses upon specialized observations, the specialized translation of those observations into theory, a specialized theory itself, or the application of such a theory in a

particular case, the expert’s testimony rests “upon an experience confessedly foreign in kind to [the jury’s] own.” *Id.*

Following *Kumho Tire*, courts have permitted experts to offer testimony discussing “ordinary practices and usages” in a particular industry. *See Highland Capital Mgt., L.P. v. Schneider*, 379 F. Supp. 2d 461, 471 (S.D.N.Y. 2005) (discussing instances in which courts permitted testimony from expert witnesses regarding customs and practices in the securities industry based upon the expert’s knowledge of standard trading practices); *see, e.g., Scott v. Chipotle Mexican Grill, Inc.*, 315 F.R.D. 33, 46 (S.D.N.Y. 2016) (expert permitted to “identify Chipotle’s practices and structures and place them within a larger context of industry norms”).

**B. The Defense’s Proffered Expert Testimony Will Assist the Jury**

The government seeks to preclude a wide swath of Mr. Storm’s proffered expert testimony on the basis of relevance or “fit.” (*See, e.g., Gov’t Mot. (Gov’t Mots. to Exclude (“Gov’t Mot.”))* at 8, 15, 18, 24). The relevant inquiry is “whether expert testimony proffered in the case is sufficiently tied to the facts of the case that it will aid the jury in resolving a factual dispute.” *Fosamax*, 645 F. Supp. 2d at 173 (quoting *Daubert*, 509 U.S. at 591).

But the fit test is not a difficult one to meet in this case: “The dispositive question under Rule 702 is whether the testimony will assist the trier of fact.” *In re Pfizer Inc. Sec. Litig.*, 819 F.3d 642, 661 (2d Cir. 2016) (citation omitted). As the instant matter involves cutting-edge technology and a nascent industry replete with its own jargon with which the average juror will not be familiar, expert testimony is wholly appropriate and indeed critical so that the jury can understand the basic underlying facts—and interpret the facts in context.

Further, as discussed in detail below, much of the government’s “fit” claims are easily refuted by reference to the government’s own claims in the Indictment, its opposition to Mr.

Storm's motion to dismiss and for reconsideration, and its own expert reports. Mr. Storm's experts are critical to address and rebut the claims that the government has already made clear it will make.

Moreover, the government's claims are premature, as it bears the burden of proof and has yet to put on its case. This is exactly why Mr. Storm did not elect to invoke Rule 16 expert discovery and made the express choice to keep his own expert theories confidential.<sup>2</sup> The defense still does not know the scope of the testimony that the government intends to offer. While the government has made certain expert disclosures, some of those disclosures are deficient or the math simply does not tie out, and the government has yet to disclose 3500 materials, or its exhibits. These materials may raise additional topics where expert testimony may be of assistance and will continue to color the defense strategy as to what expert testimony will assist the jury. *See, e.g., Scott*, 315 F.R.D. at 45 ("An expert also may offer commentary on documents in evidence if the expert's testimony relates to the 'context in which [documents] were created, defining any complex or specialized terminology, or drawing inferences that would not be apparent without the benefit of experience or specialized knowledge'" (quoting *Fosamax*, 645 F. Supp. 2d at 192)).

**C. The Defense's Anticipated Expert Testimony Will Not Violate Rule 704(b)**

The government has also sought to preclude the testimony of certain defense experts to the extent it touches on the general knowledge and intent of users and developers in the blockchain industry. (*See Gov't Mot.* at 11, 19, 22, 23). Under the Supreme Court's recent

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<sup>2</sup> The defense, of course, maintains its prior objections to this Court's rulings on pretrial expert disclosure.

decision in *Diaz v. United States*, 602 U.S. 526 (2024), such evidence is admissible and should not be excluded under Rule 704(b).

Federal Rule of Evidence 704(b) provides that “[i]n a criminal case, an expert witness must not state an opinion about whether the defendant did or did not have a mental state or condition that constitutes an element of the crime charged or of a defense.” Fed. R. Evid. 704(b). But Rule 704(b) “proscribes only expert opinions in a criminal case that are about a particular person (‘the defendant’) and a particular ultimate issue (whether the defendant has ‘a mental state or condition’ that is ‘an element of the crime charged or of a defense’).” *Diaz*, 602 U.S. at 534.

The rule does not prohibit the introduction of expert testimony about the mental state of groups of people more broadly, from which jurors may infer the mental state of the defendant. The Supreme Court squarely addressed this issue last year in *Diaz*, where the Court allowed a government agent to testify as to the knowledge of “*most* drug couriers.” *Id.* There, the defendant, who was charged with drug trafficking, claimed that drugs found in her vehicle were placed there without her knowledge. *Id.* at 529. The government called an agent as an expert witness who testified that “in most circumstances, the driver knows they are hired . . . to take the drugs from point A to point B.” *Id.* at 530. The Supreme Court reasoned that “[a]n expert’s conclusion that ‘most people’ in a group have a particular mental state is not an opinion about ‘the defendant’ and thus does not violate Rule 704(b).” *Id.* at 538; *id.* (Jackson, J., concurring) (noting that “[b]oth the [g]overnment and the defense are permitted, consistent with Rule 704(b), to elicit expert testimony ‘on the likelihood’ that the defendant had a particular mental state, ‘based on the defendant’s membership in a particular group.’”).

The decision in *Diaz* confirmed what the Second Circuit has long held: Rule 704(b) “does not prohibit all expert testimony that gives rise to an inference concerning a defendant’s mental state. The plain language of the rule . . . means that the expert cannot expressly ‘state the inference,’ but must leave the inference, however obvious, for the jury to draw.” *United States v. DiDomenico*, 985 F.2d 1159, 1165 (2d Cir. 1993) (internal citation omitted). “It is only as to the last step in the inferential process—a conclusion as to the defendant’s actual mental state—that Rule 704(b) commands the expert to be silent.” *Id.* at 1164 (internal quotation marks omitted); *see also United States v. Pollok*, 2025 WL 1553327, at \*10 (2d Cir. June 2, 2025) (holding that expert’s testimony did not violate Rule 704(b) “because, although her testimony (when combined with other evidence in the trial) could have been used to conclude that [the defendant] knowingly engaged in abusive conduct, that final inference was left to the jury”).<sup>3</sup>

Here, the defense should be permitted to call expert witnesses who, like the agent in *Diaz*, will testify about the knowledge and intent of most sophisticated users and developers of blockchain technology. The experts the defense expects to call will testify based on their own experience. They will also refrain from testifying about Mr. Storm’s intent specifically.

Because these defense experts will not express an opinion about Mr. Storm’s mental state but instead will leave that ultimate determination to the jury, their testimony will not violate Rule 704(b) and should not be precluded.

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<sup>3</sup> As the case law demonstrates, the government routinely presses to admit this sort of general mental state evidence, and courts routinely permit it. Rule 704 is not meant to be applied differently based on the identity of the party, and this Court should not countenance the government’s effort to have Rule 704 act as both sword and shield: admissible when the government seeks it but not when offered by the defense.

**D. The Defense Disclosures Do Not Violate Rule 16, and in Any Event, Exclusion of the Defense Expert Is Not the Appropriate Remedy**

The government seeks additional disclosures that go far beyond the requirements of Rule 16. Indeed, the government’s position essentially treats Rule 16 disclosures like expert disclosures in civil cases. This Court should reject such an expansive interpretation of Rule 16.

As relevant here, Rule 16(b)(1)(C)(iii) provides that “[t]he disclosure for each expert witness must contain: [1] a complete statement of all opinions that the defendant will elicit from the witness in the defendant’s case-in-chief; [2] the bases and reasons for them; [3] the witness’s qualifications, including a list of all publications authored in the previous 10 years; and [4] a list of all other cases in which, during the previous 4 years, the witness has testified as an expert at trial or by deposition.” Fed. R. Crim. P. 16(b)(1)(C)(iii); *see United States v. Kwok*, 2024 WL 1773143, at \*1 (S.D.N.Y. Apr. 24, 2024) (“Rule 16. . . (b)(1)(C)(iii) require[s] parties to disclose, for each expert witness, a complete statement of all opinions that the party will elicit from the witness in the party’s case-in-chief and the bases and reasons for them.”)

Rule 16 previously required only a “written summary” of the expert’s opinion, but the rule was amended in 2022 “to facilitate trial preparation, allowing the parties a fair opportunity to prepare to cross-examine expert witnesses and secure opposing expert testimony if needed.” Fed. R. Crim. P. 16 Advisory Committee’s Note to 2022 Amendment. Despite the amendment, the disclosure obligations of criminal defendants under Rule 16 remain far less burdensome than the obligations under Federal Rule of Civil Procedure 26. The Advisory Committee explicitly acknowledged the differential standards between Rule 16 in criminal cases and Rule 26 in civil cases, emphasizing that Rule 16 “is not intended to replicate all aspects of practice under the civil rule in criminal cases, which differ in many significant ways from civil cases.” *Id.* Indeed, the Committee’s Note is consistent with the well-accepted principle that “federal criminal



discovery is far more limited than federal civil discovery.” *United States v. Sampson*, 898 F.3d 270, 280 (2d Cir. 2018); *see also* Joel Androphy, 1 White Collar Crime § 7:6 (3d ed. 2023) (explaining that expert discovery in criminal cases is less “illuminating” than in civil cases).

Unlike Federal Rule of Civil Procedure 26, which mandates comprehensive disclosure of expert materials including “the facts or data considered by the witness,” “any exhibits that will be used to summarize or support them,” and detailed compensation information, Federal Rule of Criminal Procedure 16(b)(1)(C) requires only “a complete statement of all opinions” and “the bases and reasons for them.” Moreover, while the Advisory Committee noted that the 2022 amendment to Rule 16 “requires a complete statement of all opinions the expert will provide,” it expressly clarified that it “does not require a verbatim recitation of the testimony the expert will give at trial,” providing defendants with greater flexibility in expert preparation. Fed. R. Crim. P. 16 Advisory Committee’s Note to 2022 Amendment.

The defense’s expert disclosures satisfy the requirements of Rule 16. Nothing more is required.<sup>4</sup>

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<sup>4</sup> However, to the extent this Court considers the defense’s expert disclosures to be insufficient under Rule 16, this Court should allow the defense to supplement its disclosures. Preclusion, at this stage, is “too harsh a remedy.” *See Kwok*, 2024 WL 1773143, at \*3 (“With more than three weeks until trial, the Court finds exclusion [of defense expert testimony] too harsh a remedy.”); *Media Glow Digital, LLC v. Panasonic Corp. of N. Am.*, 2019 WL 1055527, at \*1 (S.D.N.Y. Mar. 6, 2019) (explaining that “[r]ejection of expert testimony is the exception rather than the rule,” thus “‘vigorous cross-examination’ and ‘the presentation of contrary evidence’” are appropriate remedies); *United States v. Rosario*, 2014 WL 6076364, at \*4 (S.D.N.Y. Nov. 14, 2014) (explaining that even where an expert’s prior disclosures can be properly challenged as untimely, the Court can choose not to exclude the proposed testimony where “the substance of the proposed testimony was not a surprise” and would cause no prejudice from the timing of the disclosure). This approach reflects the overriding principle in criminal cases that discovery rules are meant to prevent unfair surprise and enable informed trial preparation, not to trap parties in technicalities. Simply put, the defense has acted in good faith here, and it should be permitted to address any alleged deficiencies with additional disclosure.

### **III. ARGUMENT**

#### **A. Dr. Matthew Edman’s Proposed Testimony is Reliable and Helpful to the Trier of Fact and Should Be Allowed in Its Entirety.**

This Court should also deny the government’s motion to preclude the expert testimony of Dr. Matthew J. Edman because his proposed testimony is sufficiently tied to the facts of, and is highly relevant to the pertinent issues in, this case. As an initial matter, it should be noted that while Dr. Edman is the defense’s primary technical expert, the government challenges neither his methodology, the support for his opinions, nor 90% of the contents of his report. The government has effectively conceded that Dr. Edman is both qualified and that the vast majority of his proffered testimony meets the standards for reliability and relevance. (*See Gov’t Mot. at 24-28.*)

In seeking to exclude Dr. Edman’s testimony, the government is effectively seeking to prevent the jury from hearing any expert testimony that challenges their characterization of what they call the “Tornado Cash service.”

##### **1. Dr. Edman’s Proposed Testimony on General Features of the Ethereum Network and DeFi Protocols is Appropriate and Helpful to the Jury**

The government first takes issue with Dr. Edman’s proposed testimony regarding what it calls the “general aspects of blockchain technology” and “discussion of other cryptocurrency businesses,” including on smart contracts and the “variety of purposes” served by “decentralized finance or DeFi” applications, as well as the ways in which “users ‘typically interact’ not only with Tornado Cash but with ‘other DeFi applications.’” (*Gov’t Mot. at 24-25.*) While conceding that “some expert testimony to explain those aspects of the blockchain and cryptocurrency that are relevant to this case is appropriate,” the government argues that “[a] detour through the

landscape of ‘decentralized finance’ applications is not probative of any contested fact and will certainly confuse and waste the time of the jury.” (*See id.* at 25, 26.)

As an initial matter, the government’s claims regarding the level of background explanation required in a criminal expert disclosure are wholly inconsistent, as they fault certain defense experts for having too many definitions and others for not enough. Dr. Edman, for example, included a detailed overview of the Ethereum blockchain and ETH, even though some definitions may already be in evidence by the time he testifies in the defense case. Dr. Hurder, by contrast, provided a list of relevant terms that she may need to define but did not provide detailed definitions. The government equally criticizes both approaches. (*Compare* Gov’t Mot. at 17 (seeking to bar Dr. Hurder from explaining basic blockchain terms that she did not define) *with id.* at 24 (chastising Dr. Edman for “meandering testimony about general aspects of blockchain technology” and complaining about the “broad nature” and unclear purpose of his “background information”).) Both approaches are appropriate and do not undermine either expert’s opinions.

Further, Dr. Edman has provided certain definitions and a necessary explanation of general features of the Ethereum blockchain to respond to matters left unaddressed by Philip Werlau, the government’s purported expert witness on blockchain technology. For example, the government takes issue with Dr. Edman’s proposed testimony regarding proof-of-stake and proof-of-work (*Id.* at 25); yet Mr. Werlau’s proposed testimony does not include any explanation of how transfers of ETH or ERC-20 tokens (like TORN) are conducted on the blockchain, aside from a bare-bones statement that “[a] transfer of ETH is conducted by transmitting an instruction to a node on the Ethereum network” and that to “validate the transfer, the Ethereum network charges . . . a ‘gas’ fee.” (Dkt. 158-1, ¶ 3.) Notably, Mr. Werlau makes repeated references to

the concept of “staking” without ever explaining what that term means, aside from equating it with a “deposit.” (*Id.* ¶¶ 8-9.) Without an explanation of how transactions on Ethereum work at a basic level, the jury could be misled into believing that the Tornado Cash smart contracts and their ancillary features—what the government refers to as the “Tornado Cash service”—are, alone, sufficient to effectuate blockchain transactions. That is not the case. As Dr. Edman’s disclosure sets forth, users must sign transactions using their private keys, which is often done through the use of a software wallet. (Gov’t Mot.-4, ¶¶ 20, 22.)

The government further argues that this proposed testimony by Dr. Edman on how users “typically interact” with Tornado Cash and other DeFi applications is “irrelevant and certain to confuse the jury.” (Gov’t Mot. at 25.) To the contrary, the manner in which transactions involving Tornado Cash are actually effectuated, as well as the general features and operations of DeFi protocols, is highly relevant in this case, in which the government alleges that Mr. Storm conspired to “conduct” certain transactions in violation of 18 U.S.C. 1956; that he owned or controlled an unlicensed money transmitting business that involved “the transportation or transmission” of funds; and that he willfully caused transactions in violation of sanctions—all through his alleged involvement in a DeFi protocol and its ancillary features. To meaningfully assess Mr. Storm’s conduct and his intent, the jury must understand the features and limitations of such protocols and their ancillary features, which is precisely what Dr. Edman’s proposed testimony provides.

Courts routinely permit experts to provide general background testimony on complex areas involving technologies or issues that are beyond the knowledge of the average juror. *See, e.g., United States v. Bilzerian*, 926 F.2d 1285, 1294 (2d Cir. 1991) (permitting testimony on “general background on federal securities regulation and the filing requirements of Schedule

13D”); *Marx & Co., Inc. v. Diners’ Club Inc.*, 550 F.2d 505, 508-09 (2d Cir. 1977) (finding expert “competent to explain to the jury the step-by-step practices ordinarily followed by lawyers and corporations in shepherding a registration statement through the SEC”). Citing *Bilzerian*, the district court in *United States v. Guo* permitted an expert on cryptocurrencies to testify on various topics, including a “background about blockchain and cryptocurrency,” noting, “[a]t trial, the jury will be presented with a complicated set of facts as to two purported cryptocurrencies, and the average juror does not possess the specialized knowledge to analyze the market capitalization for cryptocurrencies or their level of ownership concentration.” 2024 WL 2262706, at \*3 (S.D.N.Y. May 17, 2024).

Indeed, Dr. Edman has previously been permitted to offer general testimony regarding blockchain technology in *United States v. Chastain*, a case which involved alleged money laundering through the use of a non-fungible token marketplace. 2023 WL 2966643, at \*9 (S.D.N.Y. Apr. 17, 2023). While the district court found that Dr. Edman could not offer testimony about the defendant’s intent or motives, it nevertheless found that “the technologies and some of the conduct at issue in this case are plainly ‘esoteric or otherwise beyond the understanding of the average juror,’ and therefore an appropriate subject matter for generalized expert testimony,” and permitted Dr. Edman to offer “general testimony about the technologies and steps that [defendant] used (and did not use) in the transactions at issue; whether or to what extent these technologies and steps do (or do not) conceal one’s identity and conduct; and common practices with respect to such technologies (such as the use of multiple cryptocurrency ‘wallets’ and ‘wallet addresses’).” *Id.* (quoting *United States v. Nektalov*, 2004 WL 1469487, at \*4 (S.D.N.Y. June 30, 2004)). The district court concluded: “To the extent that the Government takes issue with any of this testimony, it may object to specific questions at trial, challenge

Edman on cross-examination, or present contrary evidence.” *Id.* (citing *Daubert*, 509 U.S. at 596).

Similarly here, this Court should permit Dr. Edman to offer testimony regarding the general features and limitations of DeFi protocols, as well as the ways in which users typically interact with such protocols, with relevant industry examples such as Uniswap, OpenSea, and Ox so that the jury can properly assess how transactions on Tornado Cash were conducted—the *actus reus* of money laundering and a critical element of the 18 U.S.C. § 1960 and the International Emergency Economic Powers Act (“IEEPA”) violations (Counts Two and Three). Such testimony is also critical to evaluate whether the Tornado Cash smart contracts and interfaces were, as the government alleges, an integrated “service.”

The testimony is also relevant to whether Mr. Storm possessed the requisite *mens rea* beyond a reasonable doubt. As demonstrated by the proffered expert report of Mr. Werlau, the government’s case largely turns on decisions that Mr. Storm and the Peppersec co-developers made regarding the architecture of the Tornado Cash smart contracts, Peppersec UI, CLI, and relay registry.<sup>5</sup> Indeed, Mr. Werlau posits the following (largely hypothetical) criticisms of the Peppersec team’s development choices:

- The UI and CLI “could have been initially designed” regarding storage of the user’s secret note and “could . . . have been modified at any time” to store the note. (Dkt. 158-1, ¶6b);
- The UI “could have been changed to implement KYC processes” and to “enabl[e] more effective sanctions screening by providing information about who the customer initiating the deposit or withdrawal was.” (*id.* ¶ 19);

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<sup>5</sup> Peppersec, Inc. is a company co-founded by Mr. Storm, and Alexey Pertsev and Roman Semenov (co-defendant).

- The developers “could have created new pool smart contracts at any time, and updated the Tornado Cash UI and CLI to interact with those new pools.” (*id.* ¶ 17);
- The developers “could have included a know-your-customer (“KYC”) function in the Tornado Cash service.” (*id.* ¶ 18).

Similarly, Mr. Werlau posits that the relay implementation in April 2022 was a “significant overhaul of the architecture” (Werlau ¶ 15), describing it in detail, and he opines that the “upgrade to the Tornado Cash architecture” would have had the effect of increasing the value of the TORN token (*Id.* ¶ 16). Without expert testimony to provide context about DeFi software design, usage, and relayers, the jury simply has no frame of reference to evaluate these claims about the effect and intent behind these software changes.

The government’s citation to *Bankman-Fried* is inapposite; there, the district court excluded testimony regarding “innovation in the financial services industry” because, simply put, *Bankman-Fried* was, at bottom, a case about misrepresentations to investors and misappropriation of their funds. *United States v. Bankman-Fried*, 680 F. Supp. 3d 289 (S.D.N.Y. 2023). The government alleged, and eventually proved, that the defendant “stole FTX customer deposits and used billions of dollars in stolen funds for a variety of purposes, including, among other things, to support the operations and investments of FTX and [another firm he owned]; to fund speculative venture investments; to make charitable contributions; and to enrich himself.” *Id.* at 296. On those facts, it is not surprising that Judge Kaplan concluded that “whether or not FTX was innovative or combined aspects of traditional and decentralized finance” was “not at issue.” *See United States v. Bankman-Fried*, 2023 WL 6162865, at \*2 (S.D.N.Y. Sept. 21, 2023).

By contrast, here, all of the government’s allegations regarding Mr. Storm’s conduct flow from his design and alleged operation of what the government refers to as the “Tornado Cash

service.” (*See generally* Dkt. 1, ¶¶ 1, 9-31, 33, 46, 56-68; Dkt. 158-1, ¶ 6.) Whether the Tornado Cash smart contracts and their ancillary features constituted a “service” that could be “operated” at all is an important issue in this case, and without an understanding of how DeFi protocols work, the jury cannot meaningfully make that determination.

**2. Dr. Edman’s Proposed Testimony on the Chainalysis Sanctions Oracle Provides Crucial Context and Should Be Heard by the Jury**

The government next takes issue with Part F of Dr. Edman’s proposed testimony, which it attempts to characterize as “an improper attempt to opine on what sanctioned actors such as the North Korean Lazarus Group hypothetically could have done if the defendant had not facilitated their sanctions evasion.” (Gov’t Mot. at 26.) As the very title of Part F (“Integrating the ‘Chainalysis Sanctions Oracle’ into the Tornado Cash Router and CLI would not have prevented deposits to the Tornado Cash protocol from sanctioned addresses”) makes clear, Dr. Edman’s proposed testimony is offered as a rebuttal to Mr. Werlau’s proposed testimony that the Tornado Cash founders hypothetically “could also have incorporated [the Chainalysis Oracle] into the CLI” and that the Tornado Cash smart contracts “could have been changed in April 2022 to implement a call by the Tornado Cash Router to the Chainalysis Sanctions Oracle or to implement other sanctions screening mechanisms.” (Dkt. 158-1, ¶ 22.) For all the reasons set forth in the defense’s MIL No. 11 (*see* Dkt. 158 at 7, 18), Mr. Werlau’s speculative testimony about the various actions Mr. Storm “could have” taken should be excluded as irrelevant and prejudicial because this is not a civil negligence lawsuit—it is a criminal case in which the government must prove Mr. Storm’s intentional conduct.

To the extent this Court permits such testimony, however, it must permit Dr. Edman to rebut Mr. Werlau’s opinion by explaining the functions, capabilities, and limitations of the Chainalysis Sanctions Oracle. *See, e.g., Am. Empire Surplus Lines Ins. Co. v. J.R. Contracting*



*& Env't Consulting, Inc.*, 754 F. Supp. 3d 456, 462 (S.D.N.Y. 2024) (“Rebuttal expert evidence is properly admissible when it will explain, repel, counteract or disprove the evidence of the adverse party.”). Further, Dr. Edman’s opinion on the Chainalysis Sanctions Oracle is not based on “hypothetical speculation,” as the government contends (Gov’t Mot. at 26); it is, instead, based on Dr. Edman’s own analysis of “blockchain data reflecting when sanctioned addresses were added to the Chainalysis Sanctions Oracle smart contract” and a comparison of that data to the addresses attributed to the Ronin hack by another of the government’s disclosed experts, Special Agent Joel DeCapua. (Gov’t Mot.-4, ¶¶ 49, 53.) Dr. Edman intends to use this analysis to demonstrate, based on blockchain data, that the other ways Mr. Werlau speculates the Tornado Cash founders “could have” incorporated such screening functionality would have been ineffective.

Further, even if this Court excludes Mr. Werlau’s proposed testimony, Dr. Edman’s opinion regarding the features and limitations of the Chainalysis Sanctions Oracle should still be admitted because the government clearly intends to argue that Mr. Storm’s implementation of the Oracle on the UI was done so he and his co-founders “could make a public announcement claiming that the Tornado Cash service was compliant with United States sanctions” and that they “understood that this screen would not be effective” because Mr. Storm wrote in a chat that “it would be ‘easy to evade’ the new screen.” (Dkt. 1 at ¶¶ 62, 64.)

Dr. Edman should be permitted to assist the trier of fact by providing relevant technological context for these statements. As the Second Circuit has long held:

Independent of the matter of expert testimony, the trial court may admit evidence that does not directly establish an element of the offense charged, in order to provide background for the events alleged in the indictment. Background evidence may be admitted to show, for example, the circumstances surrounding the events or to furnish an explanation of the understanding or intent with which certain acts were performed.

*United States v. Daly*, 842 F.2d 1380, 1388 (2d Cir. 1988). By explaining the features and limitations of the Chainalysis Sanctions Oracle, Dr. Edman’s proposed testimony would assist the jury in assessing Mr. Storm’s conduct and statements by providing proper context on technological issues that are “esoteric or otherwise beyond the understanding of the average juror.” *Chastain*, 2023 WL 2966643, at \*9. Thus, even if this Court properly excludes Mr. Werlau’s testimony regarding what Mr. Storm “could have” done with the Chainalysis Sanctions Oracle, this Court should permit Dr. Edman to testify regarding the technological features and limitations of the Chainalysis Sanctions Oracle to provide proper context for Mr. Storm’s alleged conduct and statements regarding that tool.

### **3. Dr. Edman’s Disclosure Was Robust and More than Adequate**

Finally, the government includes a kitchen-sink argument that Dr. Edman’s testimony should be excluded because his disclosure is “woefully inadequate” when, in fact, his disclosure is more than sufficient under Rule 16. (*See Gov’t Mot.* at 27.) Indeed, the government’s quibbles about disclosure are undermined by its complaints about the length and detail of the disclosure, and are limited to the two narrow points below.

The government complains specifically about the purported lack of detail in paragraph 45 of Dr. Edman’s disclosure, arguing that it “fails to specify what transactions, dates, proposals, or updates he intends to testify about.” (*Id.*) Yet paragraph 45 clearly states that Dr. Edman will testify about “proposals submitted via the governance contract, including updates to the ‘tornadocash.eth’ ENS name and associated IPFS CID for the Tornado Cash UI.” (*Gov’t Mot.*-4, ¶ 45.) As to dates, Dr. Edman will provide testimony regarding the dates that certain “TORN tokens associated with the vesting contract identified by the ENS name ‘team3.vesting.contract.tornadocash.eth’ were claimed and subsequently ‘sold.’” (*Id.*) The

government also takes issue with what it calls Dr. Edman’s “ambiguous disclosure” regarding his anticipated criticism of Mr. Werlau’s so-called “gas ratio methodology,” (Gov’t Mot. at 27), but any purported ambiguity is the result of the ambiguous nature of Mr. Werlau’s methodology itself, the explanation of which the government attempted to correct through a “more detailed rebuttal disclosure” after receiving Dr. Edman’s disclosure. (*Id.* at 28 n.4.) Mr. Werlau’s “gas ratio methodology” is likewise the subject of the defense’s MIL No. 11 and should be excluded because it does not even come close to meeting the requirements of Rules 702 and 703 or *Daubert* and its progeny, (*see* Dkt. 158 at 19-24), but to the extent this Court permits Mr. Werlau to testify about it, Dr. Edman has adequately disclosed that he intends to criticize the purported testing and verification of the methodology, as well as the consistency of its application. That is sufficient under Rule 16.

**B. Dr. Matthew Green’s Proposed Testimony is Reliable and Helpful to the Trier of Fact and Should Be Allowed in Its Entirety.**

The government seeks to exclude the testimony of Dr. Matthew Green. (Gov’t Mot. at 6-14.) This Court should reject the government’s request, as it is not supported by the facts or law.

**1. The Disclosure Regarding Dr. Green’s Testimony Was More Than Adequate**

The government repeatedly challenges the adequacy of the defense disclosure regarding Dr. Green’s proposed testimony. (*Id.* at ¶¶ 6-8, 11, 12.) But the government has had Dr. Green’s disclosure for over three months and did not ask for a supplemental disclosure. The first the defense heard of the government’s view that Dr. Green’s disclosure does not satisfy Rule 16 was on June 6, 2025, when the government filed its motion. Under these circumstances, the government’s silence should be deemed a forfeiture of any objection to the adequacy of the disclosure.

In any event, the disclosure regarding Dr. Green’s testimony is more than adequate. (*See* Ex. A.) As discussed above, expert witness disclosures in criminal cases are different from expert witness disclosures in civil cases. Rule 16(a)(1)(G)(iii) requires only “a complete statement of all opinions,” “the bases and reasons for them,” “the witness’s qualifications,” and “a list of all other cases in which, during the previous 4 years, the witness has testified as an expert.” Fed. R. Crim. P. 16(a)(1)(G)(iii). Dr. Green’s disclosure amply meets that standard. The defense has provided extensive, detailed, and specific information about Dr. Green’s opinions and the bases and reasons for them.

While the disclosure adequately stated Dr. Green’s opinions, out of an abundance of caution because the government claims it is not clear what his opinions are (Gov’t Mot. at 7-8), the defense is providing a supplemental disclosure (with a redline to the prior disclosure). (Ex. A.) Unlike in *United States v. Amirov*, cited by the government, Dr. Green’s disclosure does not simply list the broad subjects of his expected testimony. (*See* Gov’t Mot. at 7-8 (citing 2025 WL 636088, at \*2 (S.D.N.Y. Feb. 27, 2025))). Rather, it provides multiple opinions, including that online privacy is important because the internet exposes a user’s personal information, which can be exploited; that there are online tools that can be used to protect users’ online privacy; that cryptocurrency blockchains often lack privacy; that there are various risks associated with cryptocurrency blockchains that lack privacy; that there are many privacy-preserving cryptocurrency blockchains and protocols; that privacy tools and privacy-preserving blockchains are designed to protect legitimate users; how one can make transactions on the Bitcoin and Ethereum networks more private; that Tornado Cash helps provide privacy to legitimate Ethereum users; and that U.S.-based companies and developers generally do not intend for cryptocurrency privacy tools and privacy-preserving blockchains to be used in criminal activity.

Even if there were any inadequacy in the disclosure (which there is not), the proper remedy would not be exclusion but to require further disclosure. (*See supra* n.4; Fed. R. Crim. P. 16 (d)(2); *Amirov*, 2025 WL 636088 at \*4 (setting date for supplemental disclosure).)

## **2. Dr. Green’s Proposed Background Testimony Is Proper**

The government complains that Dr. Green is expected to provide background information about cryptocurrency and privacy issues. (Gov’t Mot. at 7-9.) But there is no rule precluding background information, and it is common for experts to provide such testimony to help the jury. As discussed above, the “fit” rule cited by the government is a low bar, and the test is simply “whether the testimony will assist the trier of fact.” *In re Pfizer*, 819 F.3d at 661. There can be no question here that background information about how cryptocurrency blockchains and protocols work will be helpful to the jury. The average juror cannot be expected to know anything about this specialized industry and technology. Similarly, the average juror cannot be expected to know much, if anything, about online privacy risks and tools. Expert testimony on these topics will certainly assist the jury in understanding the issues in this case. *See, e.g., Highland Capital Mgmt., L.P.*, 379 F. Supp. 2d at 471 (industry custom and practice testimony admitted).

Moreover, contrary to the government’s claims, testimony on these topics is highly relevant to the issues to be presented at trial. (*See* Gov’t Mot. at 8.) The government has alleged in the Indictment that part of the original motivation for developing Tornado Cash was privacy concerns. (*See* Dkt. 1 ¶¶ 1, 5, 9.) The government has also made clear in the Indictment that it intends to argue that the privacy offered by Tornado Cash made it a “haven for . . . money laundering and sanctions evasion.” (*Id.* ¶ 1.) The defense is entitled to counter this characterization of Tornado Cash with evidence that privacy is important for legitimate users and

that privacy tools are common and not associated with criminal activity. Privacy will thus be at the center of this trial, and it is disingenuous for the government to claim otherwise.

Dr. Green’s expected testimony is thus unlike the testimony that was excluded in *Bankman-Fried* and *Chastain*, cited by the government. (Gov’t Mot. at 8 (citing *Bankman-Fried*, 2023 WL 6162865, at \*2; and *Chastain*, 2023 WL 2966643, at \*9).) In *Bankman-Fried*, the district court found that testimony regarding whether “FTX was innovative or combined aspects of traditional and decentralized finance in its services” was not relevant to the charges in that case, which centered on defrauding customers and investors. 2023 WL 6162865, at \*2. Here, the privacy about which Dr. Green will be testifying is central to the charges in this case (e.g., it is in the Indictment), which have nothing to do with fraud but have everything to do with privacy. In *Chastain*, the district court excluded testimony about certain definitions of terms in academic literature, which it deemed not relevant to the issues at trial. 2023 WL 2966643, at \*9. Notably, however, the district court did allow limited testimony about the meaning of certain terms to the extent necessary to explain the expert’s opinions. *Id.* Dr. Green will not be offering academic definitions; rather, his testimony regarding the background of cryptocurrency and privacy will all be necessary to explain his opinions.

The government has no real argument regarding why this evidence should be excluded pursuant to Rule 403, except to rehash its view that the legitimate uses of privacy are not relevant.<sup>6</sup> (See Gov’t Mot. at 8-9.) It is not “confusing” or a “waste of time” to inform the jury about issues that are relevant to their consideration of the case. *Id.*

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<sup>6</sup> The government also complains that Dr. Green will be offering “his own views” about privacy. (See Gov’t Mot. at 8.) But of course, that is what experts do. The government cannot, on the one hand, complain that the expert is not offering “opinions” but, on the other, complain that he is.

### 3. Dr. Green Will Not Be Offering Legal Opinions

The government also argues that Dr. Green’s testimony should be excluded as improper legal conclusion testimony. (Gov’t Mot. at 9-11.) The Second Circuit has made clear that the law “distinguish[es] between factual conclusions that may be included in an expert’s testimony—though they embrace an ultimate issue to be decided by the jury—and opinions embodying legal conclusions that encroach upon the court’s duty to instruct on the law.” *Bilzerian*, 926 F.2d at 1294 (permitting testimony where expert “did not give his opinion as to whether [defendant]’s actions violated the securities laws”); *see also United States v. Scop*, 846 F.2d 135, 142, *modified*, 856 F.2d 5 (2d Cir.1988); *Marx & Co., Inc. v. Diners’ Club, Inc.*, 550 F.2d 505, 512 (2d Cir. 1977).

Dr. Green will not be offering any legal opinions. His opinions relate to the factual issues of the risks associated with online privacy and the use of online privacy tools to address those risks. (*See* Ex. A.) To the extent that he will discuss the “legitimate” uses of online privacy tools, that is not a legal conclusion but rather a factual conclusion that non-criminal actors have non-criminal reasons for wanting online privacy. (*Id.*) While Dr. Green may offer testimony about “legal” and widely distributed privacy tools, that does not equate to a legal conclusion that Tornado Cash’s conduct at issue in this case was “legal.” (*Id.*)

The government worries that somehow it will be prejudiced by Dr. Green’s testimony because it has opted not to introduce evidence regarding the failure to register with the U.S. Treasury’s Financial Crimes Enforcement Network (“FinCEN”) and threatens to introduce such evidence to rebut Dr. Green’s testimony. (*See* Gov’t Mot. at 11.) Dr. Green will not, however, be offering testimony that has anything to do with the obligation to register with FinCEN or any other regulatory requirements. Thus, there is no reason for the government to offer evidence that

Tornado Cash was not “legal” because it failed to register with FinCEN, and it would be highly prejudicial to do so. The government’s complaint appears to be an attempt to end run around its own decision not to proceed with the object of violating 18 U.S.C. § 1960(b)(1)(B) and to introduce its own impermissible theory that Tornado Cash was not “legal.” Such an invalid attempt provides no basis to exclude Dr. Green’s testimony addressing online privacy issues.

**4. Dr. Green’s Testimony Regarding the Intentions of the Cryptocurrency Industry Is Proper Under *Daubert*, *Kumho Tire*, and *Diaz***

The government lastly argues that this Court should exclude Dr. Green’s testimony under *Daubert*. (Gov’t Mot. at 11-14.) The government asserts that Dr. Green’s opinions violate *Daubert* because they “are not the product of scientific, technical, or specialized knowledge, nor are they based on reliable principles and methods.” (*Id.* at 12.) But as discussed above, this is an overly narrow reading of *Daubert*.

In *Kumho Tire*, the Supreme Court made clear that not all expert testimony is “scientific” and that the *Daubert* factors are to be applied flexibly and may not be “reasonable measures of reliability in a particular case.” *Kumho Tire*, 526 U.S. at 150, 153. Here, as in many cases, Dr. Green is testifying regarding his specialized knowledge of a certain industry. As his disclosure reflects, he has decades-long experience with the cryptocurrency industry, and is a nationally recognized expert on such matters as information security and online privacy. (*See* Ex. A.) He has taught, researched and written extensively on these topics. And he has first-hand experience advising and consulting on cryptocurrency-related projects, which included meeting and conferring with venture capitalists, software developers, and law enforcement. Clearly, Dr. Green has specialized knowledge that is beyond the experience of the average juror, and he properly relies on that specialized knowledge in forming his opinions regarding the cryptocurrency industry.



The government also gives short shrift to *Diaz*, but *Diaz* demonstrates the propriety of Dr. Green’s testimony. (*See* Gov’t Mot. at 13-14.) As discussed above, the Supreme Court made clear in *Diaz* that testimony regarding the state of mind of “most” people in a group (in that case, drug couriers) is admissible. 602 U.S. at 534, 538. The defense expects Dr. Green to testify that U.S.-based companies and software developers generally do not post software tools, including cryptocurrency privacy tools and privacy-preserving cryptocurrency software, on Github, which is freely accessible to the public, intending for them to be used in criminal activity.<sup>7</sup> (Ex. A.) Contrary to the government’s argument, Dr. Green’s anticipated testimony is not “people generally obey the law” testimony. (*See* Gov’t Mot. at 13-14.) Instead, the anticipated testimony would be important in helping the jury understand that users and developers of blockchain technology, using particular means, generally intend that the technology serve legitimate purposes.

The government also argues that Dr. Green’s opinion has no basis other than his own “*ipse dixit*.” (Gov’t Mot. at 13.) To the contrary, Dr. Green will testify based on his extensive experience working in and consulting with the cryptocurrency industry. (Ex. A.) Just as the law enforcement agent in *Diaz* testified regarding “the common practices of Mexican drug-trafficking organizations” based on his experience with such organizations, Dr. Green will testify regarding the common practices of cryptocurrency venture capitalists and software developers based on his experience with the industry. (*Id.*) And just as the agent in *Diaz* explained some of the reasons drug organizations generally do not entrust their drugs to unknowing couriers, Dr.

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<sup>7</sup> Dr. Green will not testify to any impermissible “categorical” view that no companies ever intend for their software to be used for criminal activity. (*See* Gov’t Mot. at 14.) Nor will he testify as to Mr. Storm’s state of mind in violation of Rule 704(b).

Green will explain why “respected” venture capitalists do not wish to be associated with criminal activity.

Dr. Green’s expected testimony is proper and should be admitted in its entirety.

**C. Dr. Hurder’s Proposed Testimony is Reliable and Helpful to the Trier of Fact and Should Be Allowed in Its Entirety.**

The government does not contest that Dr. Hurder is qualified as an expert.<sup>8</sup> Instead, it objects to her disclosures and the reliability and relevance of three general areas of Dr. Hurder’s proposed testimony: (1) background on blockchain terminology, decentralized organizations, and token ecosystem design; (2) her opinions about TORN pricing and value; and (3) her opinion that the developers of Tornado Cash did not obtain compensation from activity on the UI or the use of the Tornado Cash smart contracts.

As an initial matter, the government’s objections regarding the sufficiency of Dr. Hurder’s disclosure are unsupported, and in any event, are mooted by her additional disclosure filed herewith as Exhibit B (“Hurder Supp. Discl.”). In fact, Dr. Hurder’s initial 13-page disclosure (“Hurder Discl.”) was more than sufficient to give notice of her opinions and the bases therefore. As with its objections to other defense experts, the government misapprehends the difference between the civil and criminal rules, which do not require disclosure of all facts and data an expert considers or summary charts that she intends to offer. (*See supra* at 9.) There are no grounds to exclude her testimony based on the sufficiency of her disclosures.

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<sup>8</sup> Nor could it. As the Ninth Circuit recognized in *E. Ohman J:or Fonder AB v. NVIDIA Corp.*, Dr. Hurder leads Prysm, “an economic consulting firm based in New York and Los Angeles that specializes in distributed ledger and blockchain technology.” 81 F.4th 918, 929 (9th Cir. 2023) (quotations omitted). Dr. Hurder is a “knowledgeable and competent” professional with a PhD in “business economics from Harvard University” who has held “academic, consulting, and business positions in which [she has] specialized in the economics of blockchain.” *Id.*

The Court should also deny the government's other objections to Dr. Hurder's testimony based on reliability and relevance. As discussed below, her proposed testimony is highly reliable and will be helpful to the jury in determining critical issues at trial.

**1. Under the Flexible *Kumho Tire* Standard, Dr. Hurder's Proposed Testimony Is Reliable**

Dr. Hurder is a qualified expert in the economics of blockchain (*see supra* n.8), who may testify based on her specialized education and experience, provided she “employs in the courtroom the same level of intellectual rigor that characterizes the practice of an expert in the relevant field.” *Kumho Tire*, 526 U.S. at 152. Courts have regularly permitted similar types of economics expert evidence. *See, e.g., Louis Vuitton Malletier S.A. v. Sunny Merch. Corp.*, 97 F. Supp. 3d 485, 505 (S.D.N.Y. 2015) (admitting economist's brand-value opinion based on qualitative experience notwithstanding objections that she performed no independent analysis); *Beastie Boys v. Monster Energy Co.*, 983 F. Supp. 2d 354, 364–65 (S.D.N.Y. 2014) (finding qualitative economic testimony regarding branding admissible because expert's reasoning was grounded in experience and research in the field); *In re N. Sea Brent Crude Oil Futures Litig.*, 2016 WL 1271063, at \*7 (S.D.N.Y. Mar. 29, 2016), *aff'd sub nom. Prime Int'l Trading, Ltd. v. BP P.L.C.*, 784 F. App'x 4 (2d Cir. 2019) (permitting expert to rely on industry literature and “training and experience in economics” in lieu of “rigorous economic testing”).

The government challenges the reliability of Dr. Hurder's opinions in her disclosure regarding (1) the absence of regression analysis to support the purported assertion that there was no connection between the TORN token price and the Tornado Cash smart contract activity (an assertion Dr. Hurder did not in fact make); (2) her opinion that TORN as a standalone governance token had value to buyers; (3) her opinion that TORN token holders did not benefit from illicit activity on Tornado Cash; and (4) the absence of an opinion on causation (or lack

thereof) of the Ronin hack to TORN's price. (Gov't Mot. at 17-22.) The government's challenges lack merit and should be denied.

**(a) The Connection Between TORN's Price and the Tornado Cash Smart Contract Activity**

The government's first complaint is that Dr. Hurder was required to conduct a "regression or other similar analysis" to support her opinion about the relationship between the TORN price and the Tornado Cash smart contract activity. (*Id.* at 18.) The government is wrong, but in any event, in response to the government's complaint, she has now conducted a regression analysis.

Dr. Hurder states that, "[p]rior to sanctions, the price of TORN was strongly and significantly correlated with overall moments in crypto markets." (Hurder Discl. at 5.) This opinion can be readily observed by her review of TORN token pricing as compared to Ethereum and Bitcoin, an analysis Dr. Hurder had performed prior to her disclosure. Such observations are widely accepted in her field and supported by academic literature. As Dr. Hurder explains in her supplemental disclosure: "Correlation is a standard descriptive statistic used to quantify the comovement of cryptocurrency prices, in particular comovement with the market as proxied by BTC and ETH." (Hurder Supp. Discl. 2(2).) *See Kumho Tire*, 526 U.S. at 148 ("[e]xperts of all kinds tie observations to conclusions through the use of ... general truths derived from specialized experience") (cleaned up); *Guo*, 2024 WL 2262706, at \*4 (finding it appropriate for an expert to base conclusions on practical experience, and "the government can probe the bases for [her] testimony through cross examination").

Nevertheless, to test her conclusions and respond to the government's criticism, Dr. Hurder has conducted a regression analysis, which confirms her opinion. (*See* Hurder Supp. Discl. 2(3).) As such, there is no basis to challenge the reliability of her methods.

**(b) Profits or Revenue Distributions for TORN Holders**

Next, the government quibbles with Dr. Hurder’s statement that “owners of the TORN token could not expect profit or revenue distributions of ETH from Tornado Cash smart contract activity as a benefit of token ownership.” (Gov’t Mot. at 18.) Dr. Hurder provides context to this statement in subparagraphs (a) through (f) of paragraph 13 where she explains, among other things, that the Tornado Cash smart contracts charged no protocol fee or fee of any kind, but that relayers (which were optional) could charge a fee (a, c). (Hurder Discl. ¶ 13(a)-(f).) She further explains that there was no project revenue or profits (d). (*Id.* ¶ 13(d).)

The government argues that these points are “intentionally confusing.” But there is nothing confusing about these straightforward points. Many DeFi blockchain projects do in fact charge a “protocol fee,” which is when a DeFi protocol’s smart contracts are themselves programmed to autonomously take a fee, or a commission, on transactions performed, and hold it in a wallet or smart contract according to whatever protocols were programmed into the code. Those fees then amount to project revenue that can be deployed by project founders, or a DAO, or distributed back to users, depending on how a project is designed.<sup>9</sup> The fact that the Tornado Cash developers chose not to include such a fee, such that there were no project revenues, is relevant to the jury’s analysis of the government’s claim that Tornado Cash was an “enterprise that is carried on for profit or financial gain.” (Dkt. 157 at 31 (citing *Banki*, 685 F.3d at 114).) Far from being confusing, Dr. Hurder’s proposed testimony is sound and would aid the jury on an important issue.

Indeed, Dr. Hurder’s points are critical to rebutting the government’s own proposed expert witness, Mr. Werlau, who, in his discussion of the implementation of the relayer registry,

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<sup>9</sup> Dr. Hurder includes a definition of “protocol fee” in her supplemental disclosure. (Hurder Supp. Discl. 3(1).)

appears to intentionally conflate ETH and TORN, stating that the relayer registry represented a “new way” for “holders of TORN tokens to realize a share of the revenues generated by relayer fees.” (Dkt. 158-1 ¶ 15.) But as Dr. Hurder will explain, the registry required relayers to stake TORN, not ETH, while relayers earned any fees only in ETH. It is important the jury understand the entire context of the relayer registry given that it is central to the government’s profit claims, and Dr. Hurder should be permitted to provide her expertise in providing context to the registry and to rebut Werlau, who lacks any training and experience in the “monetiz[ing]” of “technology.” (*Id.*)

**(c) The Value of TORN as a Governance Token**

Next, the government seeks to preclude Dr. Hurder’s opinions concerning the value of TORN as a governance token, and her citation of UNI and COMP tokens as examples of governance-only tokens that retain monetary value. (Gov’t Mot. at 19-20.) But UNI and COMP are canonical and relevant examples of governance tokens for individuals who work in the cryptocurrency space, and they provide direct insight on the value of TORN as a governance token.<sup>10</sup> The government challenges the support for Dr. Hurder’s claim that governance tokens have value (*id.* at 19), but this ignores both the UNI and COMP evidence, and also the data showing that between June 11, 2021 and the launch of the relayer registry on March 1, 2022 (the government’s only claim to monetization of TORN), the average price of TORN was **\$46.41**. (*See* Hurder Discl. ¶ 11(d)).

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<sup>10</sup> The government’s repeated suggestion that providing the jury facts and context regarding blockchain and cryptocurrency projects would be confusing is deeply troubling. The jury is likely to have little experience with blockchain technology and DeFi projects, which involve terms of art that are not intuitive and differ from conventional centralized businesses in myriad ways. This case therefore calls for more, not less, background information from relevant experts to ensure a fair trial.

Moreover, Dr. Hurder has supplemented her report to provide additional information to support her conclusion that demand for TORN was in part driven by the desire of users to participate in the Tornado Cash DAO governance. (*See* Hurder Supp. Discl. 1(1-6).) Indeed, her revised disclosure includes detailed sections that describe various methods for determining the “economic value of decision-making rights,” which include analyzing the degree to which the DAO has the power to make and enforce impactful decisions or allocate resources, performing an opportunity cost analysis, and analyzing events where the governance function is suddenly removed. (*Id.* at 2-3.) Dr. Hurder analyzes TORN governance value under each of these methods, and cites relevant academic literature. (*Id.* at 3-5.) There can be no serious dispute as to the bases for her conclusions regarding TORN governance value, and “[i]n light of [Dr. Hurder’s] proffered explanation and expertise in cryptocurrency, ‘any such alleged failures in [Dr. Hurder’s] methodology go to the weight of [her] expert testimony, not its admissibility in the first instance.’” *Guo*, 2024 WL 2262706, at \*3 (citing *Emig v. Electrolux Home Prods., Inc.*, 2008 WL 4200988, at \*9 (S.D.N.Y. Sept. 11, 2008)).

**(d) TORN Token Holders Did Not Benefit from Any Illicit Use of Tornado Cash**

The government also questions the support for Dr. Hurder’s opinion that TORN token holders did not benefit from illicit use. (Govt. Mot. at 20.) Once again, her opinion is well-supported, and to the extent that any additional explanation was required, Dr. Hurder addresses it in her supplemental disclosure. (*See* Hurder Supp. Discl. 2(4-7).) Dr. Hurder’s initial disclosure relied on data concerning the SEC Ripple suit, the Tornado Cash sanctions, and the Ronin hack as support for her conclusions. As to the SEC Ripple suit and the Tornado Cash sanctions, the government posits both are merely evidence of the effect of government enforcement against illicit activity on a token price, rather than evidence of the effect of the illicit activity itself on a

token price. (Gov’t Mot. at 20-22.) But illicit activity is inextricably linked to government enforcement actions, such as the Tornado Cash sanctions. And in any event, Dr. Hurder opines that irrespective of government involvement or enforcement actions, the Ronin hack demonstrates that illicit activity did not benefit the TORN price. (Hurder Discl. ¶ 19(c).)<sup>11</sup> To the extent the government wishes to argue to the jury that Dr. Hurder’s views are wrong or unhelpful, it is free to do that, but preclusion of her testimony is not warranted.

The government also attempts to undermine the correlation-based opinion regarding the significance of the Ronin hack, but as explained above and in her supplemental disclosure, “correlation is a standard descriptive statistic.” (Hurder Supp. Discl. 2(2).) As Dr. Hurder explains, “[t]he lack of correlation between the alleged Ronin Hack deposits and the price of TORN, combined with visual inspection of the two time series, suggests there is no immediate evidence of a linear relationship between the two. Absent a compelling alternative theory of a nonlinear relationship or an omitted variable, there is no reason to conduct a regression analysis.” (*Id.* ¶ 5.) Despite the well-accepted methodology Dr. Hurder initially employed, to respond to the government’s complaints, Dr. Hurder ran a regression analysis and determined that (1) the announcement of the Ronin Hack did not benefit the TORN token price, but in fact appears to have harmed it because, controlling for market movements, in the two weeks following the announcement of the Ronin Hack, the price of TORN dropped net 14%, which is statistically

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<sup>11</sup> The government’s objections to the use of the Ronin hack as a proxy is more than a little surprising, given that the government and its witnesses have taken the position that the Ronin hack constituted nearly 40% of all the alleged illicit funds transferred through Tornado Cash smart contracts (Hurder Discl. ¶ 19 (citing SA DeCapua)). Furthermore, the government also recognizes that the Ronin hack is a useful proxy because it was the only hack named in the indictment. (*See e.g.* Dkt. 1 ¶ 56.)



significant; and (2) the alleged deposits of Ronin Hack proceeds did not appear to explain variation in the price of TORN. (*Id.* 3-7.)

In other words, as explained in her initial disclosure and in her supplemental disclosure, the price of all cryptocurrency tokens is highly correlated to BTC and ETH and any departures from ETH and BTC are caused by individual idiosyncrasies with the project at issue. (*See id.* 1(a).<sup>12</sup>) The announcement of the Ronin hack was the idiosyncrasy that caused the price of TORN to fall faster than the market. Indeed, Dr. Hurder's initial correlation analysis established that the price of TORN decreased more than the market after the Ronin hack became public, and there was no correlation between the quantity of Ronin hack deposits and the price of TORN. (Hurder Discl. ¶ 19 (identifying that the price of TORN decreased 18% when the Ronin hack deposits occurred and that in the two weeks after the Ronin hack became public in March 2022, TORN's price declined faster than the market).) Dr. Hurder's regression analyses only further bolster that opinion. (Hurder Supp. Discl. 2(3).) Accordingly, Dr. Hurder's opinion that illicit use—and specifically the Ronin Hack, which is at the center of the government's case—did not benefit the TORN price, is well-supported, reliable, and relevant, and should be admitted.

## 2. Dr. Hurder's Testimony Is Relevant to the Issues in the Case

Because Dr. Hurder is qualified as an expert, and her testimony is reliable, the only remaining issue is whether Dr. Hurder's testimony is relevant and will assist the trier of fact. *See Nimely v. City of New York*, 414 F.3d 381 (2d Cir. 2005).

The government's relevancy arguments are entirely belied by its own arguments regarding the matters at issue in the case. Indeed, its arguments exhibit a strange cognitive

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<sup>12</sup> Citing Ferroni, Filippo, CHICAGO FED. LETTER, *How interconnected are cryptocurrencies and what does this mean for risk measurement?*, Essays on Issues March 2022, No. 466, available at <https://doi.org/10.21033/cfl-2022-466>.

dissonance, ignoring the obvious ways that Dr. Hurder’s opinions directly address statements the government has made throughout the case—even in its concurrently-filed *in limine* motions—about the evidence and arguments it intends to offer at trial.

Dr. Hurder’s proposed testimony goes to the heart of key government assertions. First, the government’s theory of the case depends on its contention that Tornado Cash operated as a “fully integrated service” (*see* Dkt. 1 ¶ 10) comprised of (i) a website; (ii) a user-interface (“UI”); (iii) a network of “relayers”; and (iv) smart contracts. (*Id.*) Second, the government’s theory that Tornado Cash was a “money transmitting business,” required to meet the elements of Count Two, is that it was an “enterprise that is carried on for profit or financial gain.” (Dkt. 157 at 31 (citing *United States v. Banki*, 685 F.3d 99, 114 (2d Cir. 2012).) Third, the government’s theory of profit is that Mr. Storm earned profits from the “Tornado Cash service” by way of TORN tokens, including not only tokens allocated to him by the TORN DAO as a founder of Tornado Cash but also tokens he received as a user. (Dkt. 1 ¶ 69-75.) Fourth, through its purported expert Phillip Werlau, the government claims that the February 2022 implementation of the relayer registry “served to increase the value of TORN tokens,” by “requiring relayers to purchase TORN tokens, creating increased market demand for these tokens.” (Dkt. 158-1.) Dr. Hurder’s proposed testimony directly speaks to these government assertions and is therefore highly relevant and admissible.

#### **(a) The Structure of TORN Allocation**

First, the government challenges Dr. Hurder’s opinion that token structure incentivized sustained token price growth, and incentivized a long term commitment to the project.<sup>13</sup> This testimony is relevant to several contested issues in the case, including whether the founders

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<sup>13</sup> This opinion is also in the heartland of Dr. Hurder’s unique specialized experience and supported by her review of the Tornado Cash project and governance documentation.

knowingly controlled a money transmitting business and knowingly engaged in money laundering (as opposed to possessing a good faith belief that the Tornado Cash project was a decentralized organization dependent on the success of the community as a whole).<sup>14</sup>

The government also misleadingly omits the end of paragraph 23, which concludes: “Because of the three-year vesting structure, the founders would have benefitted from the token price remaining high for at least three years.” (Hurder Discl. ¶ 23(b).) That is the primary opinion in paragraph 23, and is clearly relevant to the case, as Mr. Storm’s incentives were not aligned with any illicit use of the Tornado Cash protocol (*see supra* at 32; Hurder Discl. ¶ 20-22) but, to the contrary, were aligned with broad, long-term, legitimate adoption.

The evidence is also relevant to Mr. Storm’s intent both in recommending the token allocation (which initially lacked any use case), and in his decision to sell TORN tokens in August 2022. Contrary to the government’s argument, Dr. Hurder’s testimony would not offend Rule 704(b) as she will not specifically speak to Mr. Storm’s state of mind, but, drawing on her experience consulting in the cryptocurrency industry, she can speak to the “common practices” in the industry with respect to founder allocations and token sales and testify to the state of mind of “most” people in designing and implementing similar systems, and the incentives of such systems. As the Supreme Court held in *Diaz*, such testimony regarding the state of mind of “most” people in a group is admissible. 602 U.S. at 534, 538. This testimony is relevant to explain the nature of Mr. Storm’s holdings and the reasons for his sales.

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<sup>14</sup> This testimony is also relevant to Dr. Hurder’s opinion that the design of the Tornado Cash DAO incentivized community involvement and in fact the Tornado Cash DAO was very active. (Hurder Discl. ¶¶ 10, 11.)

**(b) Compensation from Tornado Cash**

The government also seeks to prohibit Dr. Hurder’s opinion that the founders “received no compensation” from deposits and withdrawals through the Tornado Cash smart contracts because neither the smart contracts nor the UI had a protocol fee. (Gov’t Mot. at 23.) But Dr. Hurder’s proposed testimony directly relates to whether Mr. Storm conspired to operate an unlicensed money transmitting business, which requires proof that that Tornado Cash was an “enterprise that is carried on for profit or financial gain,” that “for a fee, accept[ed] or receive[d] funds and transfers such funds on behalf of the public” (Dkt. 154 at 29) and whether the Tornado Cash developers sought to and did profit from the “Tornado Cash service as a business[.]” (Dkt. 1 ¶¶ 41, 1.) The typical business definition of profits for a business is “the financial gain when revenue exceeds expenses.”<sup>15</sup> But neither Tornado Cash (the smart contracts) nor Peppersec, Inc. (the company), received any revenues from Tornado Cash, because the Tornado Cash pools, UI, CLI, and related applications did not charge a fee. It is the government’s definition of profits—based solely on alleged gains from token sales by individuals, not Peppersec<sup>16</sup>—that is unusual, not Mr. Storm’s. Dr. Hurder should be able to testify about the typical types of revenue that blockchain projects often receive and point out that there were no such revenues here. This testimony is squarely relevant to rebut the government’s contentions.

Finally, Dr. Hurder should be permitted to rebut Special Agent George, who claims that Mr. Storm purchased three types of assets from proceeds he received as a Tornado Cash founder. (See Dkt. 155-3 ¶ 4.)

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<sup>15</sup> Kenton, Will, INVESTOPEDIA, *How Gross, Operating, and Net Profit Differ*, (June 6, 2025) available at <https://www.investopedia.com/terms/p/profit.asp>

<sup>16</sup> The government’s profit theory is also narrowly time limited, as it contends that such value was only created once the relayer registry was launched in April 2022. Prior to April 2022, the government presumably recognizes Mr. Storm had no profit motive and made no profit.

Dr. Hurder's proposed testimony in response to Special Agent George includes an explanation of the differences between the founders' allocation of TORN and vTORN, which was allocated to early adopters of the Tornado Cash pools.<sup>17</sup> Contrary to the government's claims, this testimony is highly relevant, given that the government is making the erroneous accusation that the vTORN that Mr. Storm received as an early user of Tornado Cash represents "profits from the Tornado Cash service" and "is directly relevant to each of the charged offenses." (Dkt. 157 at 30-31). Indeed, the government's position is factually baseless and Special Agent George's testimony should be precluded entirely, but if it is not, Dr. Hurder should be permitted to respond to it. (*See* Dkt. 158 at 27-31.)

**3. Dr. Hurder's Testimony About Blockchain and Token Ecosystem Design Will Assist the Trier of Fact Because It Is a Province Beyond the Common Experience of a Juror**

Finally, turning to the government's objections to Dr. Hurder's opening "Blockchain and Ecosystem Design" section, the government complains both that the section is too detailed and

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<sup>17</sup> Contrary to the government's claim, the vesting, claims, and sales data that Dr. Hurder refers to in paragraph 26 were provided to the government. As noted by Dr. Hurder, she relied on data from Naxo for vesting, claims, and sales of TORN. (Hurder Discl. ¶ 26.) Shortly after providing the disclosures, Emily Stierwalt, an associate with Waymaker, emailed the government a link to a Box folder by Naxo. When the government could not access the Box folder, Ms. Stierwalt provided a Sharefile link, which contained a zip folder titled "Edman Disclosure Materials." A subfolder titled TORN contained the following vesting data: a torn vesting Excel, the python script for the vesting, the contract script for the vesting, three Excel spreadsheets related to Vesting Contract 3, and a drawio file regarding Vesting Contract 3. The subfolder also contained a Binance withdrawal drawio file that provided an overview and 17 different subfolders for different wallets, each of which contained multiple Excel files. In addition to this data, the Edman Disclosure Material also contained a subfolder containing exchange records. Clearly, the defense provided substantial data for vesting, claiming, and sales of TORN.

If the government thought any data was missing, the government should have asked the defense to provide it. Indeed, the defense had significant communications with the government regarding data relied on by DeCapua and Werlau to ensure that all data was provided (and additional data for Werlau was provided just this week). The government however raised no concerns in the three months since the disclosures were made, waiting until their motion to exclude experts to raise any purported failure to disclose data.

not detailed enough. (Gov. Mot. 15-17.) On the one hand, it complains that Dr. Hurder sets out on “a detour through the esoteric field of cryptoeconomics and token pricing,” while on the other hand complaining that Dr. Hurder failed to define a list of terms, many of which are used without definition by the government’s own experts.<sup>18</sup> Further, and once again, the government oddly criticizes the defense for proposing testimony on topics that the government itself has raised and which the defense must be permitted to address.

As an initial matter, Dr. Hurder will not necessarily cover all of the matters in Section 1 in her testimony. Dr. Hurder’s disclosure contains a statement of opinions that the defense *may* elicit from her in its case-in-chief and in rebuttal. While the defense cannot know which precise opinions it will choose to elicit until the conclusion of the government’s case-in-chief, the defense nevertheless disclosed a wide-range of topics that may assist the trier of fact because this case is riddled with subject matter that is beyond the province of the common experience as a juror. Such testimony is the proper province of an expert witness as “[e]xpert witnesses provide laymen with crucial knowledge where the common experience of [ ] jurors is insufficient to comprehend particular facts of a case.” *In re Methyl Tertiary Butyl Ether (MTBE) Prod. Liab. Litig.*, 643 F. Supp. 2d 482, 504 (S.D.N.Y. 2009).

Much of Dr. Hurder’s proposed testimony in Section 1, to the extent it is helpful to the trier of fact after the government’s presentation, will serve as a predicate to her testimony related to the facts of this case.

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<sup>18</sup> For example, Werlau uses the terms Ethereum, Ethereum blockchain, and staking without definition (Werlau Discl. ¶¶ 4-5), as do George and DeCapua (George Discl. ¶ 1, DeCapua Discl. ¶ 1). George also uses smart contract and stablecoin without defining the terms. (George Discl. ¶¶ 6, 9.)

Courts in this district and circuit routinely deny requests to exclude proposed expert testimony where the foundation provided by the proposed testimony sets the “predicate” for the expert’s opinion testimony. *See, e.g., Guo*, 2024 WL 2262706, at \*4; *Reach Music Pub., Inc. v. Warner Chappell Music, Inc.*, 988 F. Supp. 2d 395, 404 (S.D.N.Y. 2013). Moreover, the Second Circuit has explained that expert testimony “that does not directly establish [or dispute] an element of the offense charged, in order to provide background for the events alleged in the indictment” is properly admissible. *United States v. Daly*, 842 F.2d 1380, 1388 (2d Cir. 1988); *United States v. Mulder*, 273 F.3d 91, 102 (2d Cir. 2001) (parties are “free to offer expert testimony both as background for an offense and to assist in proving one or more elements of the offense”); *see also* Fed. R. Evid. 702 Advisory Comm. Note (“it might also be important in some cases for an expert to educate the fact-finder about general principles, without ever attempting to apply these principles to the specific facts of the case.”) Accordingly, the government’s objections on the basis that the proposed testimony is background” or not “about what happened with the Tornado Cash service specifically” (Gov’t Mot. at 15) is not reason to exclude it.

For example, the government complains that Dr. Hurder’s proposed testimony on “what blockchain projects and DAOs do in general tells the jury nothing about what happened with the Tornado Cash service specifically.” (*Id.* at 16.) But nothing in the Federal Rules or *Daubert* and its progeny says that such background and context materials must immediately address the offense charged to be admissible.<sup>19</sup> All that is required is that the testimony is relevant and helpful to the trier of fact.

Moreover, despite the government’s objection, Dr. Hurder’s testimony on DAOs is relevant to many relevant issues in the case. The indictment alleges, and the government must

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<sup>19</sup> Tellingly, the government cites no support for this assertion.

prove, that Mr. Storm controlled a money transmitting business, but in fact, as is true of any project that seeks decentralization, Mr. Storm and the co-founders ceded control to the DAO, which controlled many aspects of the project through its governance mechanism.<sup>20</sup> The fact of the DAO is also relevant to what drove demand for TORN tokens, and how the governance feature of TORN—the only feature until the attempted use case of the relayer registry came into effect—in fact drove the price. As discussed above, Dr. Hurder has detailed opinions on this point, and she must first explain what a DAO is and how it works in order for her opinion to make sense. The government itself has referenced the role of the DAO and likely will introduce evidence on this point. (*See, e.g.*, Dkt. 1 ¶¶ 27-28.)

Accordingly, testimony about DAOs “will likely prove helpful in allowing the trier of fact to understand the evidence better,” because DAOs are beyond the province of an average juror and will assist in understanding a key component of Tornado Cash that the government has placed in issue. *Fin. Guaranty Ins. Co. v. Putnam Advisory Co.*, 2020 WL 4251229, at \*4 (S.D.N.Y. Feb. 19, 2020).

The same is true for other aspects of Dr. Hurder’s proffered background testimony, such as her discussion of decentralization and the considerations of founders in evaluating objectives other than profits. Again, the jury may have no context to evaluate even the word “decentralized,” which is certain to come up, and how that is different than centralized businesses. These foundational concepts are important in understanding her later conclusions about decisions with respect to the Tornado Cash protocol, such as whether it charged protocol

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<sup>20</sup> For instance, the government ignores that the purported “updates to Tornado Cash” and “implement[ion of] a relayer algorithm and a smart contract called the ‘Relayer Registry’” was implemented by the DAO rather than by Mr. Storm or his alleged co-conspirators. (Dkt. 120 at 4.) The context of how DAOs operate will assist the trier of fact in resolving a key factual issue in dispute.



fees and its governance structure. Simply put, Dr. Hurder should be allowed to lay an adequate foundation for her testimony. *Daly*, 842 F.2d at 1388 (expert testimony “that does not directly establish [or dispute] an element of the offense charged, in order to provide background for the events alleged in the indictment” is properly admissible).

Section 1 also includes an important discussion of supply and demand drivers for blockchain tokens (Hurder Discl. ¶ 3), which is critical to Dr. Hurder’s opinions and squarely relevant to respond to Werlau’s unsupported claim that the relayer register “served to increase the value of TORN tokens.” Dr. Hurder’s opinions in paragraph 3, based on academic literature and her own specialized experience, are in direct response. (*Id.* ¶ 3.) In sum, Dr. Hurder’s testimony is reliable, relevant, and will be helpful to the jury. It should be admitted in its entirety.

**D. Michael Carter’s Proposed Testimony is Reliable and Helpful to the Trier of Fact and Should Be Allowed in Its Entirety.**

The government makes several objections to the proposed testimony of Michael Carter, none of which are well taken or provide reason to exclude his testimony. First, it claims that Mr. Carter’s proposed testimony is irrelevant and should be excluded to the extent that it was offered to rebut the testimony of Theodor Vlahakis, the employee of the FinCEN whom the government now says it does not intend to call since it has dropped the 18 U.S.C. § 1960(b)(1)(B) charge and indeed now claims that FinCEN licensing is irrelevant to this case. Second, it claims that Mr. Carter’s opinion was inadequately disclosed (a claim undermined by the fact that the government then spends three full pages responding to his opinions). Neither of these claims are well founded and, in any event, the defense is supplementing its disclosure for Mr. Carter to provide a

more thorough explanation of his opinions. To the extent there were any deficiencies, they have now all been cured. (*See* Ex. C.)

The government is wrong that FinCEN's regulatory requirements for money transmitters are no longer relevant to this case. As explained in Mr. Storm's recent letter motion to dismiss (Dkt. 164 at 4), and as the government has conceded (Dkt. 156 at 28), Section 1960 only applies to "money transmitting businesses," all of which are required to be registered with FinCEN. *See* 31 U.S.C. § 5330(a); *see also* Indictment, Dkt. 1 at ¶ 32 ("Under federal law, all money transmitting businesses, including businesses engaged in transmission of cryptocurrencies such as ETH, are required to register with [FinCEN]."). Thus, whether Tornado Cash could have complied, as a practical matter, with the regulatory requirements for "money transmitting businesses" is directly relevant to the element of the offense that Tornado Cash be such a business.

The government's motion reflects its untenable theory of the case: It now asserts that it will not claim, and its expert Mr. Werlau will not assert, that the Bank Secrecy Act ("BSA") required the defendant to implement KYC or anti-money laundering compliance measures, but instead it will merely assert that Mr. Storm "*could* have implemented processes to identify customers of the Tornado Cash service and address the rampant money laundering through the service." (Gov't Mot. at 34 (emphasis in original).) This is not a criminal theory of liability under any statute and reflects why this Court should dismiss this entire case: If Tornado Cash was (admittedly) not subject to the BSA, on what basis was it required to implement compliance measures to stop the bad acts of third parties? Are businesses now to be held criminally liable for the acts of their users based on whether they failed to stop them when they were under no regulatory requirement to do so?

This Court should dismiss this case outright but, if it does not, it must permit Mr. Storm to respond by pointing out that there was no regulatory requirement that he implement such measures. Mr. Carter should be permitted to offer that testimony. In addition, unless this Court dismisses the Superseding Indictment as Mr. Storm has requested, it will be for the jury to decide whether Tornado Cash was such a business. *See* 18 U.S.C. § 1960(a). The issues Mr. Carter will address regarding whether Tornado Cash had the attributes of, and could practically function as, a money transmitting business are directly relevant to this element of the offense.

Further, if Mr. Werlau is permitted—without any foundation and beyond his relevant expertise—to speculate that Mr. Storm “*could* have implemented processes to identify customers of the Tornado Cash service” (Gov’t Mot. at 34 (emphasis in the original)), then Mr. Carter should be able to respond that, in fact, Mr. Storm could not. Indeed, and to the contrary, as Mr. Carter explains in his additional disclosure, due to “inherent limitations in [KYC] tools and processes, it was, and continues to be, impossible for Tornado Cash to apply KYC procedures.” (Ex. C at ¶¶ 34-41.)

This testimony is absolutely critical not only to respond to Mr. Werlau but also to the arguments that the government will likely make throughout the trial, as it has in the Indictment and various pretrial filings. The Indictment makes multiple allegations concerning the alleged failure to implement KYC and AML procedures into Tornado Cash, highlighting how critical these claims have been to the government’s theories, for example:

- “Throughout the time period charged in this Indictment, the Tornado Cash service *failed to establish an effective AML program or to engage in any KYC efforts.*” (Dkt. 1 ¶ 34);
- “ROMAN STORM and ROMAN SEMENOV... knew full well that they *could have implemented AML and KYC programs* in the Tornado Cash service, but determined not to do so. ...After exchanging these messages [about KYC on Tornado], STORM and

SEMENOV *took no steps to install KYC or implement an AML program* in the Tornado Cash service.” (*id.* ¶ 37);

- “STORM, SEMENOV, and CC-1 *took no further steps to integrate KYC, AML, or any other form of ‘full compliance’* into the Tornado Cash service.” (*id.* ¶ 38);
- “ROMAN STORM...*took no steps to block or even monitor deposits or withdrawals, or to collect any identifying information from customers* of the Tornado Cash service.” (*id.* ¶ 44);
- “[d]espite obtaining confirmation that the UI change was ineffective [at blocking bad actors from using the software], the defendant and the Tornado Cash founders . . . *took no further action to prevent [them].*” (Dkt. 53 (Gov’t Opp.to Def. Pretrial Mot.) at 13);
- The Peppersec co-developers “*purposely failed to have an effective AML program.*” (*Id.* at 71-72.<sup>21</sup>)

As noted above and in the defense motions, Mr. Werlau is not qualified to opine on what KYC could have been done, and such testimony should be precluded. Without that expert evidence, and given the government’s abandonment of the theory that Tornado Cash was required to be licensed, the government has no evidentiary basis to make arguments about the necessity of KYC/AML screening, and this Court should preclude them. But if the government is permitted to raise KYC or AML compliance, then Mr. Storm should be permitted to rebut it through the testimony of Mr. Carter.

The government further argues that Mr. Carter lacks expertise to render an opinion on the efficacy of KYC tools, but this argument completely ignores his curriculum vitae, which demonstrates substantial experience in compliance work dating back to 2015, both with

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<sup>21</sup> The phrases highlighted in bold italics demonstrate that the government’s theory is actually an impermissible negligence theory. The Supreme Court has long held that, except in limited circumstances expressly recognized by Congress, criminal liability may not be imposed based on mere negligence. *See, e.g., Elonis v. United States*, 575 U.S. 723, 738 (2015) (the Supreme Court has “long been reluctant to infer that a negligence standard was intended in criminal statutes”).

consulting firms such as FTI and Alvarez & Marsal, and also in-house with blockchain technology companies. (Ex. D.) Mr. Carter's specific fields of expertise include BSA and AML compliance, sanctions controls, data privacy, consumer protection, and anti-fraud compliance. Indeed, it is quite rich that the government challenges the expertise of Mr. Carter, a compliance expert, to opine on the applicability of KYC procedures to Tornado Cash, given that he responds directly to the testimony of Mr. Werlau, who has no apparent experience in compliance at all.

Finally, the government seeks to preclude Mr. Carter's proffered testimony that privacy features in transactions are not inherently illicit. (Gov't Mot. at 35). The government suggests that this is an improper legal opinion, but this is not a statement about the law at all. Mr. Carter does not purport to expound on the elements of any charge, and does not state that Tornado Cash was legal. He is merely providing background, based on his training and experience, as to the appropriate need for privacy in financial transactions. In the updated disclosure, he provides specific examples from his own professional experience and concludes that "privacy tools are an important element of routine digital and financial safety measures commonly used by the public and varyingly acknowledged and encouraged by government agencies." (Ex. C ¶ 11.)

This testimony is critical for several reasons. First, whether or not Tornado Cash served a legitimate need of users is relevant to Mr. Storm's intent, as discussed above.

Second, the government intends to argue that the fact that Mr. Storm used a friend's Binance account to sell TORN tokens, and then instructed his co-developers subsequently to change pins and passwords, reflects consciousness of guilt and a desire to keep these sales secret from law enforcement. (Gov't MIL at 32; Dkt. 158-6 (George Discl.) ¶ 9.) But this is far from true: those actions only shielded Mr. Storm's financial activity from public view, a privacy concern that animated his creation of Tornado Cash in the first place. This shielding from public

view stands in contrast to hiding anything from law enforcement, which, of course, has subpoena and warrant authority.

Finally, Mr. Carter's testimony regarding privacy tools is also useful in responding to what could be a critical jury misimpression fostered by the government that would be unfair to Mr. Storm: equating legitimate privacy interests with illegal concealment. Tornado Cash was designed to and did help users achieve privacy, that is, secrecy, in their cryptocurrency transactions. Without a basic understanding that secrecy has many legitimate purposes and not all secrecy equals illegal concealment, the jury may be misled into rushing to judgment and assuming the protocol development was automatically bad and illegal. The proffered testimony from Mr. Carter responds to this potential misimpression, while leaving the government room to argue that certain actions can be illicit if made with the requisite criminal knowledge and intent. The jury should be permitted to hear that financial privacy is common and not inherently illicit and there are many lawful ways to ensure such privacy on the blockchain.

**E. Jeremy Sheridan's Proposed Testimony is Reliable and Helpful to the Trier of Fact and Should Be Allowed in Its Entirety.**

The government has moved to exclude Mr. Sheridan's proposed testimony in its entirety on the basis that it is improper lay opinion testimony and more akin to expert testimony under Rule 702. (Gov't Mot. at 35-39.) The government also argues that Mr. Sheridan's testimony would be improper under Rule 702 on the basis of insufficient disclosures under Rule 16. In a final argument, the government states in conclusory fashion that this Court should "otherwise... exclude[] [the testimony] under Rule 403." (*Id.* at 37, 39.) Each of these arguments is addressed in turn.

**1. Mr. Sheridan’s proposed testimony is proper lay opinion.**

Rule 701 requires that lay opinion testimony be: “(a) rationally based on the witness’s perception; (b) helpful to clearly understanding the witness’s testimony or to determining a fact in issue; and (c) not based on scientific, technical, or other specialized knowledge within the scope of Rule 702.” Fed. R. Evid. 701. Mr. Sheridan’s proposed testimony, which was offered in rebuttal to proposed government witnesses Special Agents George and DeCapua—if they are allowed to testify—meets all three prongs.

First, Mr. Sheridan’s opinions *are* based on his perception as required under Rule 701(a). The government argues that “Mr. Sheridan’s proposed testimony is not proper lay opinion because his opinions would not be based on his perception.” (Gov’t Mot. at 37.) This misconstrues Rule 701(a) and ignores that it is permissible for individuals to develop particularized knowledge of the case through investigation after the fact. *Acosta v. Central Laundry, Inc.*, 273 F. Supp. 3d 553, 558 (E.D. Pa. 2017). That is precisely what Mr. Sheridan has done here.

Mr. Sheridan has personally reviewed the public blockchain data and other supporting documents, such as bank records, included in Special Agents DeCapua’s and George’s reports, and has percipient knowledge thereof. In *United States v. Whaley*, the government offered lay testimony of individuals who had investigated the conduct at the heart of the indictment after the fact, and offered their testimony as fact or lay opinion, not expert testimony. 860 F. Supp. 2d 584, 587 (E.D. Tenn. 2012). There, the defendants challenged the testimony on the same grounds the government challenges Mr. Sheridan. The defense argued “that (1) neither witness was involved in approving the loans in question and, thus, cannot testify about her own

perceptions, (2) both witnesses will testify to after-the-fact investigations of the loans, and (3) the proposed testimony is based upon the witnesses' specialized knowledge. *Id.* at 586.

The district court in *Whaley* relied in part on the Second Circuit's decision in *Bank of China v. NBM LLC*, in concluding that the after the fact investigations were properly admitted as lay opinion testimony. *See id.* at 591-92 (citing *Bank of China v. NBM LLC*, 359 F.3d 171 (2d Cir. 2004)). In *Bank of China*, the Second Circuit analyzed whether the testimony of a bank investigator who reviewed the defendants' activities at the tail-end of their scheme, certainly after most facts at issue, could offer lay testimony properly based on the perception of the witness as required by Rule 701. 359 F.3d at 181. The court recognized that the witness was likely chosen to investigate in part due to his years of experience in international banking and his role at the bank, but said:

The fact that [the investigator] has specialized knowledge, or that he carried out the investigation because of that knowledge, does not preclude him from testifying pursuant to Rule 701, so long as the testimony was based on the investigatory findings and conclusions, and was not rooted exclusively in his expertise in international banking.... Thus, to the extent that Huang's testimony was grounded in the investigation he undertook in his role as a Bank of China employee, it was admissible pursuant to Rule 701 of the Federal Rules of Evidence because it was based on his perceptions.

*Id.* at 181.

Though Mr. Sheridan was not an employee of any alleged victim or Mr. Storm, and his investigation was after the acts in question were over, these distinctions are not material here. Here, like the investigator in *Bank of China* and like those in *Whaley*, Mr. Sheridan obtained the requisite percipient knowledge by analyzing the specific transactions at issue in this case, and will testify about those specific transactions, not blockchain generally or the industry at large. This is permissible under Rule 701.



Contrary to the government's suggestion that Mr. Sheridan is providing summary testimony in an attempt to usurp the jury's function, Mr. Sheridan's analysis and explanation of certain transactions on the blockchain does not require technical knowledge and would help the jury to determine a fact in issue, namely, the source of specific funds at issue. Special Agent George has reviewed blockchain transactions and is opining on whether certain assets are traceable to the alleged crimes in the Indictment. Mr. Sheridan's proposed testimony will point out weaknesses in Special Agent George's testimony in part based on basic tracing of funds on the blockchain. Similarly, he will shed light on weaknesses in Special Agent DeCapua's tracing (through his voluminous produced spreadsheets) and his conclusions. His testimony will not tell the jury what conclusion to reach, but help them evaluate evidence offered by the government in the case. This is permissible under Rule 701.

Finally, contrary to the government's position that blockchain tracing violates Rule 701(c)'s requirement that the testimony is not properly the subject of expert analysis (Gov't Mot. at 38), the government has historically offered special agents to trace bank records and funds in the form of summary case agent witnesses or lay opinion testimony, though these agents traditionally had training and experience in asset tracing and in tools like Excel (which can involve highly specialized functions including macros and pivot tables).<sup>22</sup>

Blockchain asset tracing is similar, but anyone can be trained on it and, indeed, the publicly available data could, and we expect will, itself be provided to the jury. The *Acosta* court

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<sup>22</sup> While the government makes much of the risk of giving unwarranted expert authority to Mr. Sheridan before the jury (Gov't Mot. at 38-39), the government is, in fact, seeking to do just that with Special Agent DeCapua. The government seeks to cloak him in the robe of an expert to present clearly unreliable hearsay evidence to the jury in the hope that they will not only consider it (which is improper given its status as hearsay not subject to any exception), but give it undue weight.

noted that a witness may rely on inferences or reasoning outside of personal experience as long as this process is akin to a “matter of simple arithmetic, accessible to the average layperson.” *See Acosta*, 273 F. Supp. 3d at 558 (“While [the witness’s] testimony necessarily reflects certain inferences that lie outside her personal experience, her reasoning process in developing and relying on these inferences is a matter of simple arithmetic, accessible to the average layperson. There is no ‘aura of expertise’ surrounding this testimony.”) While a lay person has to be taught arithmetic at some point in their lives to be able to use it, it is not complex once learned. The same is true of the blockchain tracing here, which could be done using publicly available blockchain explorers and tools and did not require the use of any specialized software to trace the funds.

In tracing transactions on the blockchain, Mr. Sheridan is not providing opinions, but is simply providing lay/summary witness testimony as to how cryptocurrency moved step-by-step on the public blockchain—the same as when government agents are tracing amounts of money through wires and bank accounts by linking and summarizing public records. As such, Mr. Sheridan’s proposed blockchain tracing testimony satisfies the third prong of Rule 701. The mere fact that a witness, by virtue of education, training or experience, is capable of being qualified as an expert does not serve as a valid objection to his expression of lay opinion. *Hartzell Mfg., Inc. v. Am. Chemical Techs, Inc.*, 899 F. Supp. 405 (D. Minn. 1995). Here, Mr. Sheridan certainly can be qualified as an expert in this topic, but his basic blockchain testimony does not require that and is proper lay opinion and summary witness testimony.

**2. Mr. Sheridan’s testimony can be accepted as expert testimony under Rule 702.**

As noted explicitly in the amendments to the Rule 702, “The amendment does not distinguish between expert and lay witnesses, but rather between expert and lay testimony.

Certainly it is possible for the same witness to provide both lay and expert testimony in a single case.” Committee Notes on Rules—2000 Amendment (citing, *United States v. Figueroa-Lopez*, 125 F.3d 1241, 1246 (9th Cir. 1997)). Thus, it would be permissible for Mr. Sheridan to offer both lay and expert testimony. Accordingly, should this Court conclude that this is more properly expert (or mixed lay/expert) testimony because blockchain analytics are not necessarily in the ken of every day jurors, Mr. Sheridan and his methods are qualified under 702. Indeed, the government does not dispute that Mr. Sheridan’s testimony would be proper under Rule 702, but rather seeks additional disclosures about his anticipated testimony.

Mr. Sheridan and his curriculum vitae were disclosed in a timely manner to the government. The disclosure included that he would rebut the testimony of Special Agents George and DeCapua on specific topics, such that the government was on notice of his opinions (*i.e.*, contrary to the opinions of their experts on the topics set forth).<sup>23</sup> The notice provided, among other things, that Special Agent DeCapua had provided more than 400 spreadsheets but had not aggregated this data so, while he proffered a figure for alleged hacked proceeds through Tornado Cash of more than \$1 billion, it was entirely unclear how that figure had been reached.

The disclosure also noted that Mr. Sheridan’s analysis was ongoing, which was a key caveat given the volume of material that the government had disclosed and the fact that Special Agent DeCapua’s math did not add up. The two-week period between the government’s disclosure and the due date for the defense experts was not sufficient to analyze the volume of

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<sup>23</sup> The defense also noted that Mr. Sheridan may offer testimony as to certain compliance reports that evidence certain fund flows into Tornado Cash. Given that Mr. Storm does not have an obligation yet to provide exhibits, and these materials may implicate other concerns, the defense cannot provide further information about the specifics of this testimony, but will supplement as soon as practicable. Again, the defense believes this testimony is not an expert opinion, but merely would provide a summary of the facts as to the flow of certain cryptocurrency transactions prior to entering the Tornado Cash smart contracts.

data produced, which likely took Special Agents DeCapua and George many months. Indeed, the government provided supplementary information in answer to the defense questions on March 4—the day before the defense disclosures were due—and March 6, the day after, and provided additional information in its rebuttal reports.

In any event, the defense believes that its notice was sufficient, given that it believed the testimony to be lay testimony under Rule 701. Nevertheless, concurrent with the filing of this opposition, the defense has since supplemented its disclosures pursuant to Rule 16 providing supplemental details relating to Mr. Sheridan’s planned opinions and methods in reaching those opinions. As noted in his initial disclosure, because his testimony, if offered, will serve to rebut the government’s experts, it is possible that his opinions will change if the government’s experts’ testimony differs from that which the government has disclosed.<sup>24</sup> These updated disclosures coupled with the fact that Mr. Sheridan was disclosed in a timely manner out of an abundance of caution, moots the government’s arguments relating to insufficient disclosure under Rule 16.

### **3. The government has articulated no actual basis to exclude the testimony under Rule 403**

The government offers no argument as to why the admission of Mr. Sheridan’s testimony would be unduly prejudicial or otherwise inadmissible under 403 beyond stating in conclusory fashion that it would “confuse the jury and waste time.” (Govt. Mot. at 39.) This Court should disregard this baseless claim. Mr. Sheridan’s intended testimony will allow the jury to better evaluate the testimony of the government’s proffered experts, not merely repeat their testimony. This is important information for the jury to have so that it may reach a just and informed verdict

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<sup>24</sup> Indeed, given the issues identified as to Special Agent DeCapua’s calculation lacking adequate support, it is likely that Mr. Sheridan will need to further supplement his disclosure after considering Special Agent DeCapua’s explanation of his methodology and analysis, which is not clear from his report, should Special Agent DeCapua be permitted to testify at all.

in this case. Rule 403 exclusion is not warranted here. For the reasons set forth above, the government's motion with respect to Mr. Sheridan should be denied in its entirety.

**F. Douglas Jacobson's Proposed Testimony is Reliable and Helpful to the Trier of Fact and Should Be Allowed in Its Entirety.**

The government also takes issue with the defense designation of Douglas Jacobson, an experienced sanctions compliance attorney, as a rebuttal expert, claiming that the government was provided insufficient disclosure and that Mr. Jacobson's opinions are likely to be largely legal. (Gov't Mot. at 28-30.) This Court should deny the government's motion, which is premature as the scope of opinions the government may yet offer regarding U.S. Treasury's OFAC and IEEPA, which may open the door to rebuttal by Mr. Jacobson, is not clear.

The defense filed a motion *in limine* seeking to limit the testimony of government witness John Pisa-Relli, an employee of OFAC. (Dkt. 158 at 42-46.) The government disclosed Mr. Pisa-Relli as a purported lay witness, but the government states that he will testify to points of law, specifically that "United States persons and entities are prohibited from, among other things: (1) dealing in property of persons whose property is blocked; (2) providing funds, goods, or services to such persons; (3) receiving funds, goods, or services from such persons; (4) participating in any transaction that evades or avoids, or has the purpose of evading or avoiding, any of these prohibitions, and (5) conspiring to violate any of these prohibitions." (*Id.* at 4.) These are legal conclusions, and bare ones at that, as it is not clear from this limited disclosure what exactly Mr. Pisa-Relli will say about the statutes and regulations that underlie his conclusions, or how he may choose to illustrate or apply them.

As the defense argued in its motion *in limine*, any expert testimony from Mr. Pisa-Relli should be excluded, as Mr. Pisa-Relli is not a legal expert and has not provided any disclosure of

his expert opinions. (*Id.* at 42-46.) The defense believes that Mr. Pisa-Relli should be precluded from offering legal opinions and, assuming that is the case, no testimony of Mr. Jacobson would be required. Mr. Pisa-Relli's testimony should be limited to the bare facts that OFAC designated the 0x098B716 wallet as a sanctioned entity and that the Peppersec co-founders did not obtain any license to deal with it.<sup>25</sup> However, should this Court permit Mr. Pisa-Relli to testify about the law concerning the IEEPA and OFAC regulations, the defense should be permitted to rebut such testimony.

#### IV. CONCLUSION

For the foregoing reasons, Mr. Storm respectfully requests that this Court deny the government's motions to exclude the testimony of defense experts.

DATED: June 18, 2025

Respectfully submitted,

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<sup>25</sup> The defense also has offered to stipulate to these facts.